


DIABLO CANYON RURAL PLANNING AREA

Evolving Traditions in a New Economy

A Collaboration of the Bar T Bar and Flying M Ranches, the Diablo Trust, and Coconino County



Conservation, viewed in its entirety, is
the slow and laborious unfolding of a new
relationship between people and land.

Aldo Leopold

(front cover) Ephemeral lake on Anderson Mesa.

(inside cover) Old barn at Moqui.



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Plan Approval and Adoption

The final draft plan was approved by the Diablo Trust at their annual meeting on February 25, 2005. The goals, policies, and action plan were approved by the Diablo Trust Operations Team on June 17, 2005.

The final document was approved by the Coconino County Planning and Zoning Commission on June 28, 2005, and adopted as an amendment to the *Coconino County Comprehensive Plan* by the Board of Supervisors on August 16, 2005.

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The Diablo Trust

-T- M



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(for individual photo credits, see page 58)

Other Participants

In addition to those listed here, many other individuals contributed to the planning process, attended numerous meetings, field trips, and campouts, and shared ideas and differing perspectives in order to make this a more inclusive document.



f o r e w o r d



Expansive landscapes, scenic open space, and the natural environment are hallmarks of Coconino County. While many of these wide open spaces are public lands managed for their natural qualities by government agencies such as the National Park Service, the U.S. Forest Service, and the Bureau of Land Management, approximately three-fourths of the private land in the County is maintained in an open and undeveloped condition by cattle ranching. Working ranches play an important role in defining the unique character and sense of place that attracts residents and visitors to Coconino County.

Ranching, however, is first and foremost an economic pursuit. When economic conditions become unfavorable to ranching, those ranch lands and working landscapes tend to be converted to other uses such as housing developments or 40-acre ranchettes. When that occurs, landscapes are fragmented, there is a loss of open space and habitat values, and our cultural and historical values are diminished. In other words, Coconino County becomes less unique and special, and more like everywhere else.

The “Rural Planning Area” concept is a means by which traditional agricultural enterprises such as ranching can be preserved in the face of changing economic conditions. The intent of the *Diablo Canyon Rural Planning Area* is to identify a range of economic opportunities that would be compatible with maintaining traditional ranch operations on the Flying M and Bar T Bar. To be sure, some of the options identified in this plan are very different from traditional ranch practices, but they are intended to help support the existing ranches economically while keeping the ranches intact and operating into the next generation and beyond.



EXECUTIVE SUMMARY



The Diablo Canyon Rural Planning Area (RPA) was established by the Coconino County Board of Supervisors at the request of the Bar T Bar and Flying M Ranches whose grazing leases and allotments are incorporated into the plan area. A third property owner, Bar T Bar LLLP, also joined in the request representing Moqui Ranch and the Meteor Crater RV Park. While the ranchers' primary objective is to maintain the historic ranching operations, they wanted to pursue possible alternatives to supplement the economically cyclical nature of ranching operations and also help offset the costs of various range improvements. Although many of the ranches throughout Arizona, and Coconino County in particular, have been sold for residential development, it is a shared goal of both the ranchers and the County to be proactive in planning for a future of the private lands within this plan area to ensure they do not meet the same fate. Another vital participant in the process was the Diablo Trust, a local collaborative of the two ranching families, environmentalists, land managers, NAU researchers, scientists, and other interested members of the public. Common goals of the landowners, the County, the Diablo Trust, and others who participated in this plan process were to assist the ranchers in identifying possible economic development opportunities while meeting the values of maintaining historic ranching operations, open space and healthy ecosystems the lands provide.

Goal Statement

To create a range of economic opportunities in support of private landholders and traditional uses while preserving open spaces for future generations.

Vision Statement

The Diablo Canyon RPA serves as a model approach for the continuation of traditional working ranches as long-term, economically-viable enterprises while maintaining unfragmented landscapes and restoring native ecosystems. The RPA successfully integrates economy, ecology, and community by pursuing a range of economic opportunities necessary to support and maintain the viability of ranching while recognizing the fundamental importance of the health of the land and the support of the broader community.

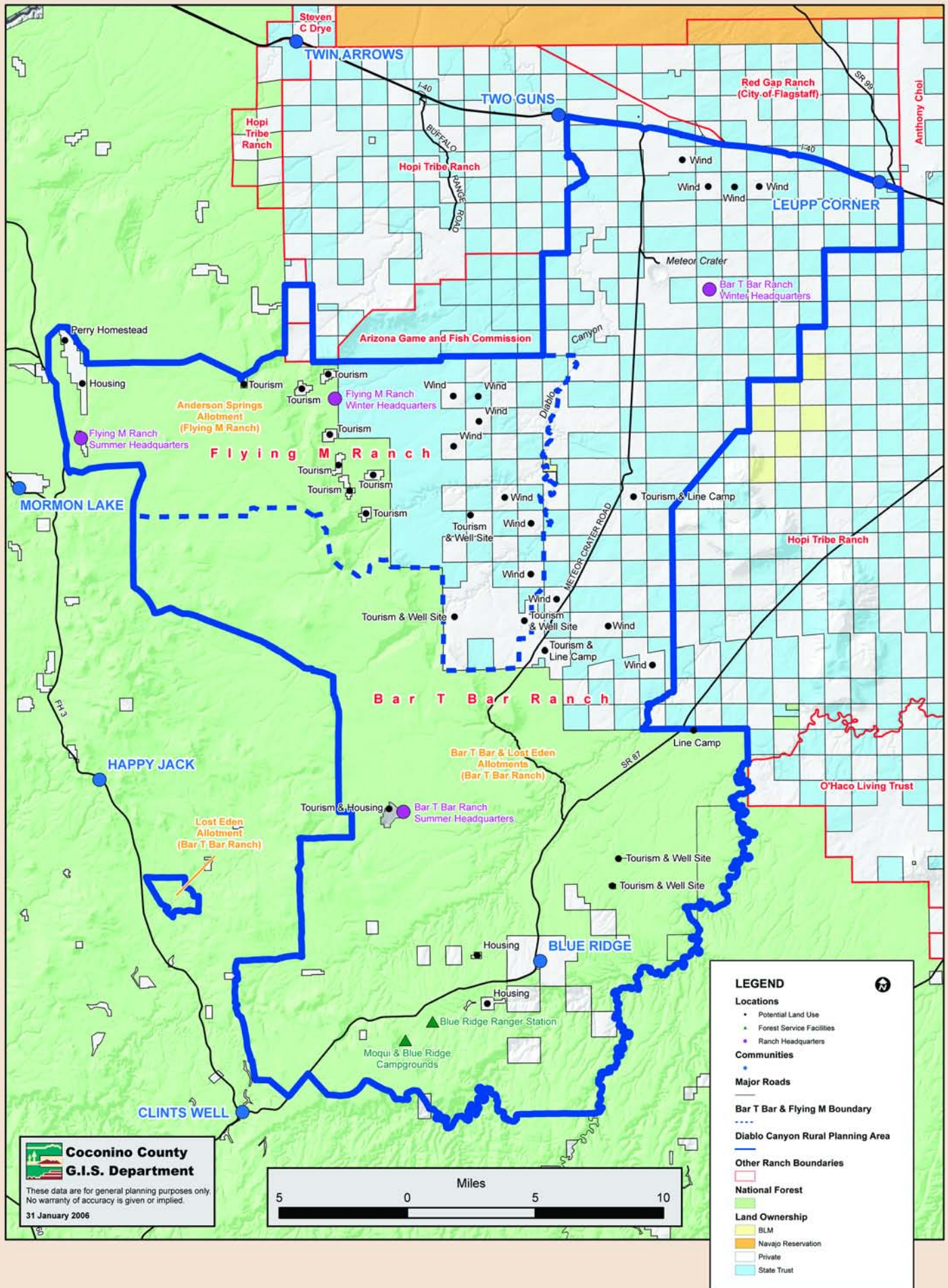
Desired Outcomes

The consensus of the planning committee was that the ultimate desired future of the land within the Diablo Canyon RPA is the maintenance of the historic ranch and grazing operations and open space qualities that the landowners have strived to maintain through good stewardship. However, the economic reality is that ranching is subject to issues beyond the control of the ranchers, from natural situations such as drought to regulatory issues impacting the viability of their operations. With this in mind, the desired outcome of the planning process has been to identify alternatives for the landowners should they find a need or desire to pursue additional economic development on their land. The intent is that the alternatives examined and supported by this plan are those which would be viable for the landowners while meeting the goals of maintaining the historic character, healthy ecosystem, and open space values identified as priorities in the *Coconino County Comprehensive Plan*.



INTRODUCTION

Diablo Canyon Rural Planning Area



In the spring of 2003 the owners of the Flying M and Bar T Bar Ranches, along with the Bar T Bar LLLP petitioned the Coconino County Board of Supervisors to form the Diablo Canyon Rural Planning Area. In response, the Board initiated a public planning process to develop Arizona's first "rural planning area plan" for the two ranches that includes 426,000 acres of private, state and federal lands.

Rural Planning Areas

Arizona state law (ARS§11.806.D) allows for the establishment of a "rural planning area" (RPA) in order to "prepare a plan that emphasizes voluntary, nonregulatory incentives for accommodating the continuation of traditional rural and agricultural enterprises."

The unique nature of the lands and livelihoods within the Diablo Canyon RPA requires a specialized planning process. Items of consideration for the RPA include:

- Environmental stewardship and landscape and open space protection;
- Growth, development, and the viability of the working ranch; and
- Changes to the character, culture, and lifestyle of the ranching industry.

Purpose of Plan

The intent of this plan is to provide direction and guidance for future economic development proposals that the ranchers may pursue either on their own, in cooperation with one another or through outside resources, in order to diversify and promote sustainability of the ranching operations. The plan does not dictate, but rather identifies options and evaluates alternatives identified by the planning committee and the ranch owners.

Planning Area

The planning area is located southeast of Flagstaff bordered by I-40 on the north, Lake Mary Road (FH 3) on the west near Mormon Lake, and extending south to Highway 87 in the Blue Ridge area. The area consists of 426,000 acres of private, state, and federal lands. Approximately 100,000 acres are private ranchlands, and an equal or greater amount is state land on which the ranches hold grazing leases. The remainder includes Forest Service grazing allotments on the Coconino National Forest. Although there are other private lands in the planning area, such as the residential development in the Blue Ridge area, they are not addressed through this process, nor will the plan apply to them. They are included solely because they are within the two ranches' Forest Service grazing areas.

Planning Process and Public Participation

The planning team was comprised of the ranch owners and their families, federal and state land management representatives, interested members of the Diablo Trust, and county planning staff. The initial kick-off was a goal setting meeting at Mormon Lake Lodge in July, 2003. This was followed by a tour of part of the RPA lands and a retreat at the Flying M headquarters in September 2003. The facilitated retreat served as a brainstorming session to identify the purpose, goal, and vision of the RPA process. For the next year and a half the committee met on a regular basis about once a month, typically tied to the Diablo Trust monthly meetings. A



Jack Metzger.



The collaborative
allows us to work
within a community,
and the community
to work with us.

Jack Metzger, Flying M Ranch



total of 15 meetings were held. In addition to sit-down meetings, the process involved an air tour over the planning area, and several field trips to both ranches to view various stewardship and monitoring projects and other ranching operations. The air tour was sponsored by LightHawk, a nonprofit conservation flight organization. The RPA meetings were noticed in the Diablo Trust newsletters and via the Trust's email list with a distribution of several hundred.



Diablo Trust “Day on the Land” field trip on Anderson Mesa.

DIABLO TRUST MISSION

To sustain healthy land resources and open space of the Diablo Trust area through education and active involvement of the broader community in maintaining ranches as long-term, economically viable land stewardship enterprises.

Relationship Between RPA and Diablo Trust

The Diablo Trust was formed in 1993 by the Metzger family, owners of the Flying M Ranch, and the Prosser family, owners of the Bar T Bar Ranch, to create a collaborative process for developing ideas to assist the ranches in the protection of open spaces and healthy habitats. The Trust is a 501(c)(3) nonprofit organization. There is not a defined membership structure. Any interested person can sign up to be on the mailing list and receive newsletters and announcements of Trust activities. The Trust's motto is “Learning from the land and sharing our knowledge... So there will always be a West.”

The Diablo Trust was a primary participant in the plan development and will be involved in the implementation as well. One of the initial goals in the establishment of the plan process was to facilitate a relationship between the Trust and the ranches that would bring funding to the Trust in their collaborative endeavors for improving the health of the ranchlands. The ranchers rely on the resources members of the Trust bring to the table, and would like to continue the mutually beneficial relationship. Likewise, members of the Trust value the historic ranching operations and the open space benefits and the commitment of the two ranches in maintaining and improving the health of the land.

In 1998 the Diablo Trust was designated a National Partnership for Reinventing Government Laboratory by the federal government. The significance of this designation is that all federal agencies are to cooperate with the Diablo Trust “within the constraints of statute.” The designation was given to the Diablo Trust to

“Demonstrate innovative approaches to restore and maintain the natural processes that create and protect a healthy, unfragmented landscape to support a diverse flourishing community of human, plant and animal life in the Diablo Trust land area.”

The Trust currently relies on a core group of individuals for operation and research, and without membership fees or dues it relies on contributions to fund their programs. Involvement by more Trust participants could be beneficial in implementing many of the economic development alternatives outlined in this plan. Volunteering time and resources for marketing is one example where the general Trust membership could get involved in plan implementation.

Relationship Between RPA and County Comprehensive Plan

The *Coconino County Comprehensive Plan* adopted by the Board of Supervisors in September 2003 includes a strong conservation focus and promotes conservation-based planning. The plan recognizes that ranchers are the stewards of large tracts of private land and that the protection of working ranches is important to preserve habitat and protect environmental resources and open spaces. The *Diablo Canyon RPA* will be adopted as an amendment to the *Comprehensive Plan* in the same manner as community area plans. The vision and ideas put forth in the RPA are consistent with the vision, goals and policies of the *Comprehensive Plan*.

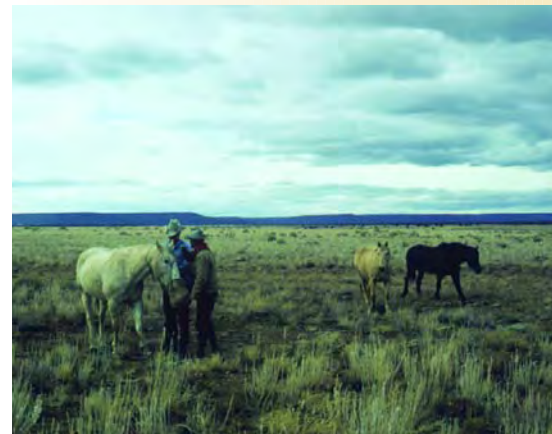
Implementation Process

The purpose of this plan is to establish support for the economic alternatives presented so that implementation by the land owners is more easily facilitated through the county process. Throughout the plan development it was the County’s responsibility to identify regulatory issues that could be problematic in pursuing certain alternatives. Staff also ensured that this plan is consistent with the *County’s* responsibility to identify regulatory issues that could be problematic in pursuing certain alternatives. Staff also ensured that this plan is consistent with the *Comprehensive Plan*. The *County Zoning Ordinance* and *Subdivision Ordinance* are the primary tools for implementing county plans. Both ordinances include requirements that the Planning and Zoning Commission and Board of Supervisors must make certain findings of fact in order to approve zone changes, subdivisions, and conditional use permits. This plan will be used for assessing development proposals through the review and approval process. Adoption of the plan by the County should provide some level of comfort that the ideas identified in the plan have a higher degree of assurance of support from the County. Any future development of the land within the planning area must be found to be in compliance with both the RPA and the *County Comprehensive Plan*.

Most development approvals are accompanied by conditions addressing certain permit requirements, site improvements, and property development standards. The conditions of approval further serve as a mechanism to ensure compliance with the policies of both the RPA and *County Comprehensive Plan*.

Plan Amendment Process

The plan may be amended as needed due to changing conditions or unanticipated issues. Plan amendments are initiated by an affected party, which in this case would be limited to the landowners and the Diablo Trust. Amendments would be considered by the Planning and Zoning Commission and County Board of Supervisors through a public hearing process.



(top) Cattle pen on the Flying M.

(above) Men and horses on the Bar T Bar.

Regulatory Issues/Land Management

Given the nature of the lands and current use of lands within the planning area, there are a number of factors that are outside the scope of this plan. In particular, the ranches maintain grazing leases on state lands which are owned and managed by the State Land Department, and have permits for grazing allotments on the national forest lands which are owned by the federal government and managed by the Coconino National Forest. Furthermore, agencies such as the Arizona Game and Fish Department oversee activity on some of the lands in the study area. These agencies were participants in the planning process, but are not responsible for adopting the plan. County jurisdiction does not extend to national forest land, but does apply to any development on state trust land.

Culture and Economics of Ranching

The culture of ranching means different things to different people, but there is no escaping the integral relationship between ranching and the West. To many, it is the romanticized West that is described in stories by Zane Grey and Louis L'Amour, and portrayed in Hollywood movies with stars such as Gary Cooper and John Wayne. To others, the culture of ranching is a lifestyle that they were born into, with land that has been in the family for generations. The earlier generation of ranchers could not anticipate the jeopardy these family ranches would find themselves in, which their descendants are dealing with now. In some cases, there are new ranchers—those folks who have had enough of the city life and have chosen to pursue something totally different—something for which no urban background could ever prepare them. While these new ranchers come with a different perspective than ranchers who were born into the life, they no doubt share many of the same values such as working on the land, preserving the open space, and the overall lifestyle.

There is an historic relationship between ranchers and public lands. With westward expansion in the 1800s lands became available for a variety of uses, with ranching being one of the biggest. Federal control evolved through Congressional Acts, with some of the more significant ones being the Homestead Act of 1862, the Forest Homestead Act of 1906, the Stock-Raising Homestead act of 1916, and the Taylor Grazing Act of 1934, which established the permitting process for grazing allotments on national forest land.

As the West grew and pressures on public lands grew, new considerations came into play. Now, ranchers must concern themselves not only with range improvements, but also with a myriad of permitting, review and approval processes, a whole host of new regulations, and in many cases public scrutiny. Furthermore, as the West has grown, ranchers have found their operations being encroached upon by sprawling residential development. Along with this growth comes competition for resources, such as water, and concerns with the interface between grazing cattle and recreation users, and neighboring residences. Ranching in the 21st century is a lot different than in the 19th.

The issues and regulations that ranchers must currently deal with are not only time-consuming, but can be costly as well. Dealing with the increasing complexity of the public land permitting process and with more stringent environmental laws has a significant financial impact on the rancher.



The underlying principle that built the ranches as profitable businesses is the capacity of grazing available to them. The economies of scale, the grazing system, and land tenures are the basis that defines these operations. The grazing system in place relies on the grazing of national forest lands during the growing season (summer). All of the state and private lands are rested during the growing season. Any reduction of use on the national forest lands has a big effect on the whole picture. If a rancher were to lose the grazing on national forest lands, it would reduce their capacity by 2/3. Each ranch would no longer be economical since they would have to use state and private lands during the growing season, leaving only 1/3 of the grazing capacity available. The uncertainty created by politics, regulations, and management of the national forest lands is the real threat to the ranches. No amount of cost cutting or revenue from value-added product revenue could offset a 2/3 reduction in cattle numbers. This is what drives the 40-acre subdivision explosion that has been seen in the West.

There are other factors which affect the economy of ranching. The historic economic cycle of ranching is a matter of supply and demand. When there is a lot of beef on the market, prices go down and ranchers reduce their herd. As a result, less beef is on the market and prices go back up. The current cyclical nature of the ranching economy is addressed in an article by Bill McDonald, Executive Director of the Malpai Borderlands Group and published in the Quivira Coalition newsletter. The article, titled "The Economics of Ranching in 2002" describes the "economic squeeze" that American cattle ranchers have been experiencing, particularly in the past 10 years. He tracks the value in a 450 lb. steer calf which in 1981 brought an average of 71 cents per pound, in 1991 \$1.06/per pound, and in 2001 \$1.11, a five cent increase in 10 years. McDonald points out the obvious that while the price per pound over that 10 year period was relatively level, the costs of producing the cattle was not. The cost of living increased substantially for ranchers, as well as the rest of the population.

McDonald explains that the rancher, feeder, and processor are all part of the cycle. The nature of this cycle is that one segment is typically making a profit when the other two aren't. This is due to retailers trying to keep the market cost relatively stable. McDonald points to certain changes that have occurred which are at least partially responsible for the change in economics. McDonald points to the processing industry which is dominated by four conglomerates which process 82% of the meat, while neither the feedlots nor cow/calf operators are pursuing consolidation. He suggests that there is more control in consolidation and alliances. It seems that the economic picture McDonald describes is not conducive to the type of family operation that has been typical of Western cattle ranches.

In order to preserve family ranching there has been growing interest in pursuing non-traditional markets. Niche markets for grass-fed, organic, and local products are an area of increasing promise, but like everything else require time, energy, and expense to make them viable alternatives.

The bottom line seems to be that the ranching culture which was once so romanticized, and one where the rancher was able to focus on the business of ranching, has gone with the times. Today ranchers, particularly those that don't want to sell their land for development, end up spending much more time looking at the bigger picture. Today ranchers must keep track not only of changes in the



Early days on the ranch.



cattle and beef industry, but the regulatory atmosphere and environmental concerns, all while considering other economic opportunities for off-setting the increasing costs of ranching.

History of the Plan Area

The two ranches in the planning area are rich in history. Two excellent sources for providing area history include the 1994 book *A Tale of Two Families: The Tremaines and The Chilsons*, written by Dean Smith; and *Notes on the Land Use History of Anderson Mesa and the Canyon Diablo Plains in the Forest Service Era 1906 to 1940*, compiled and written by Don Neff in 1984 when he worked for the Arizona Game and Fish Department. Wendell Berry's article "Profile of Good Stewardship: The Flying M and the Diablo Trust," provides good background of the transition from early ranching to the present day operations and the collaboration of the two ranches through the formation of the Diablo Trust.

Bar T Bar

The land that comprises the current Bar T Bar Ranch is the product of an almost century-long relationship between two families, the Tremaines originally from Cleveland and the Chilsons of Winslow. It is a testament to the commitment and desire to keep the ranch in the family, not to mention some very profitable business enterprises pursued in addition to the ranch operation. Although the

relationship between the two families didn't begin until 1930, the Chilson family had interests in several ranches as early as 1913 in the Tonto Basin area south of Payson. However, those ranches were subsequently purchased by John Anderson who was a contractor for the Tremaine family business, which at the time was cattle feeding. During the time of the Great Depression, Anderson ended up turning over the deed to the Bar T Bar and another ranch (the AD near Clifton) to Tremaine. Tremaine then sought out Boss Chilson to assist in operating the ranches again.

With most of the Bar T Bar being south of the Hay Lake and Little Springs grazing permit area, the ranch soon pursued acquiring more deeded land and contiguous land, with the goal of eliminating the 70-mile cattle drive between Little Springs and the Tonto Basin. As the move to the north continued they purchased the Pitchfork Ranch from the Babbitt Brothers in 1939. This was the northernmost land they acquired. From the description, the Pitchfork is probably most of the northern portion of the present day Bar T Bar. This included the lands around Meteor Crater. Several years later, in 1941, the families acquired a 199-year lease on the Meteor Crater property, which they still hold today.

Two other significant acquisitions were the Wolfolk allotment, two townships in the area which provided the connection between the summer and winter ranges, and Moqui Ranch, which was purchased in 1946.

Flying M

The Metzger family, which owns and operates the Flying M Ranch, also has their roots in Ohio, with brothers Dick and Harry who filed their first claim on Anderson Mesa in 1914. The current ranch is a combination of a number of historic homesteads which were purchased over the years by the Metzger family. The old homesteads have a history of use ranging from cattle and sheep ranch operations, farming, and even bootlegging. The history described by Don Neff in his manuscript portrays a different picture of the area than exists today. Neff describes the area of Anderson Pass (defined as the area along the eastern slope of Anderson Mesa) as being a "lively community of about 25 families which for a time supported two country schools." The Anderson Pass area includes the area south and east of Padre Canyon to just south of Grapevine Canyon, and includes the present day Flying M ranch winter headquarters. Many of the early settlers have been memorialized with their names attached to natural and manmade features—from open meadows to canyons to stock tanks.

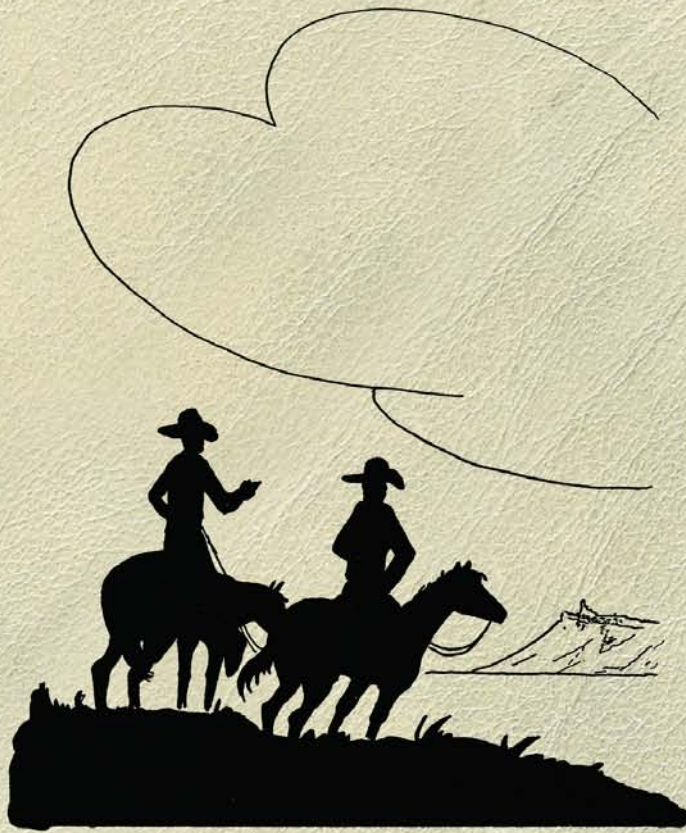
It has been noted that until year-round water was developed by the ranchers, actual grazing (by both livestock and wildlife) was very limited, on Anderson Mesa in particular. Historical accounts suggest that grazing on Anderson Mesa through the late 1930s was never season long, was never dispersed over the whole mesa, and livestock grazing was never uniformly as heavy as may be presumed.

There have certainly been substantial changes over the 100 or so years of active history for this planning area. There have been land exchanges resulting in fewer inholdings and more lands available for development, particularly in the southern part of the area along Highway 87. In the 1980s the development of new subdivisions in the Blue Ridge area began, and it is still going on today. Most of the homes in this area are seasonal residences, although the year-round population is growing as well.



(top) Bill Ogilvie, Bar T Bar foreman from 1946 to 1988.

(above) Herb Metzger (left) and Ernest Chilson at Moqui.



EXISTING CONDITIONS



Diablo Canyon forms the boundary between the Bar T Bar and Flying M ranches.

In considering alternative economic opportunities, the existing conditions are important for identifying resources which could be used—natural, cultural, and historical, for example. Equally important are challenges and limitations presented by the existing conditions.

Ranches

The northern portion of the plan area lying south of I-40 is characteristic of the high desert with magnificent and generally unobstructed views north and east toward the Hopi Mesas and Painted Desert and west toward the San Francisco Peaks. Elevations range from 5010 feet west of Winslow to 7660 feet east of Mormon Lake. This area is bisected by Diablo Canyon, which also serves as the physical and actual barrier between the two ranches. Bar T Bar maintains its primary ranch headquarters in this high desert portion of the RPA.

The only commercial development in the planning area is located at the I-40/Meteor Crater Road interchange. The property to the southwest of the interchange is developed with an RV Park and convenience market with gas sales. Business offices for Meteor Crater Enterprises, which owns and operates the facilities at Meteor Crater, are also located in this area. Meteor Crater itself is located in the planning area, approximately 5 miles south of I-40 and about two miles west of Bar T Bar's ranch headquarters. The Crater is a major tourist attraction for the area and includes a museum, gift shop, and employee housing which are all privately owned and operated.

The best way to educate is through the heart. We know that only through heartfelt community can we bring about protection for our local family ranches.

Trish Jahnke, musician and member of Diablo Trust



Wildlife on the ranches.
(top) Pronghorn. (middle) Bull elk.
(above) Mule deer.

Bar T Bar maintains grazing leases on the checkerboard state and private land in this area. Ranches owned by the Hopi Tribe, but not part of their trust land (reservation) bound the planning area to the west and east in this northern portion. The Arizona Game and Fish Department maintains a buffalo ranch in the area south of Two Guns and adjacent to the north/central RPA boundary.

Flying M Ranch winter headquarters are located approximately 12 miles southwest of the Bar T Bar's between Yeager and Anderson Canyons. The summer headquarters for the Flying M are on top of Anderson Mesa on a private inholding known as Ashurst Run. The area on top of Anderson Mesa is on the east side of Forest Highway (FH) 3 near Mormon Lake, and south of Ashurst Lake. Anderson Mesa runs all the way to Highway 87, which bisects the southeastern portion of the planning area near Blue Ridge.

The Blue Ridge area is the most developed and populated of all the private lands within the planning area. It includes several subdivisions—Clear Creek Pines Units 3-9, Starlight Pines, Starlight Pines Ranchettes, Tamarron Pines, Blue Ridge Estates, Mogollon Ranches, and Pine Canyon. Zoning in these areas ranges from one acre to 10 acre minimum parcel size. While these developments are within the RPA boundaries, they are not included or addressed through this plan.

Bar T Bar maintains grazing allotments in this area and has a private inholding known as Moqui just south of Highway 87 where some old cabins in various stages of disrepair still remain. Bar T Bar's summer headquarters are in the general area of Hay Lake, north of Highway 87 and east of FH 3, approximately 14 miles from Happy Jack.

Natural Resources and Environmental Quality

One of the primary focuses of the Diablo Trust in assisting the ranchers has been in addressing many of the natural resource/environmental quality issues related to the ranch operations and their leases and allotments on state and national forest lands. Both ranches have a stalwart history of improving the land in conjunction with their ranching operations. These include a system of water catchments and distribution channels, resting and rotating grazing land, brush and tree removal, range science, and associated research.

In 1999 the Diablo Trust developed the *Diablo Trust Area Range Management Plan and Proposed Action*. The plan identifies six (6) management zones, based on biological diversity of the 426,000 acre plan area. A description, desired landscape description, current conditions, record of management, and proposed management and projects are described for each zone. The projects typically address grazing, vegetation manipulation, fire, fencing, water and watershed, roads, trails, and soil. The Management Plan includes a map of the six zones.

The *Diablo Trust Area Range Management Plan and Proposed Action* was developed as an alternative for the *Environmental Impact Statement for Bar T Bar and Anderson Springs Allotment Management Plan* which affects their grazing permits on the national forest. Natural resource/environmental quality issues addressed through this process include soil health, forage health, antelope population and habitat, waterfowl nesting, and vegetative management. This management plan became the “template and springboard” for the more site specific proposed action alternative included in the Draft Environmental Impact Statement (DEIS) for the *Bar T Bar and Anderson Springs Allotment Management Plan*.

Historic and Cultural Resources

For many years it was thought that Meteor Crater was the result of volcanic activity. However, after Daniel Moreau Barringer visited the site in 1902 he identified it as being the result of a meteor impact, and after expending much time and money he was able to confirm that discovery. The Barringer family still holds title to the land, but it is operated under a 199-year lease to the Tremaine/Chilson families. The crater is a popular tourist stop for travelers on I-40, as well as scientists and school children who make special trips to view the crater. The crater is over 49,000 years old and substantial in size at 570 feet in depth and with a rim 150 feet above the surrounding open desert. The sandstone remains of an early tourist shop are still visible on the east side of Meteor Crater Road just south of I-40.

The plan area is no doubt rich in archeological history as well. The physical features of the area are characteristic of sites where previous native cultures have lived.

Given the history of ranching and homesteading, there are a number of cabins and line camps throughout the planning area that may have some historical value. For example, in 1948 the old Sparr cabin was moved to the Dick Metzger homestead for Herb and Jane Metzger to live in. This is where the Flying M's current summer headquarters are located.

Public Safety

Due to the remote nature and limited population, there is little in the way of public safety visibility in this area. Given the amount of recreational use on the lands within the planning area, safety is certainly an issue for the ranchers. The ranchers take the responsibility of helping hunters and others who have problems such as flat tires or getting stuck on a muddy road. But concerns are also raised for the safety of the ranch improvements with so many people having access to both their private land and grazing allotments.

With a mix of private, state, and national forest lands, law enforcement activity is handled by different agencies. The county sheriff responds to calls on both state and private lands, while the Forest Service also has law enforcement officers for lands under their control.

Emergency medical service is limited. The closest hospital is in Flagstaff, which maintains airborne evacuation operations. A hospital is available in Winslow. Emergency medical response may also be available through either the Mormon Lake or Blue Ridge Fire District.

Wildfire was a concern in the summer of 2004 with the Jacket Fire on lands adjacent to the RPA. The wildfire was initially left to burn until it began to threaten a regional electric line providing service to the metropolitan Phoenix area. The United States Forest Service oversees fires on the national forest. The Forestry Division of the State Land Department provides fire response on state lands and works with coordinating rural fire districts and federal agencies.

There are fire districts within and adjacent to the RPA, but the ranches are not included in either of them. These are the Blue Ridge Fire District and Mormon Lake Fire District. However, it is possible that they could help in responding to fire and life safety emergencies if called on and their equipment was available.



(top) Trading post ruins on old Route 66 on the Bar T Bar.
(above) Meteor Crater.



(top and above) Water works
on the Bar T Bar.
(below right) Bar T Bar summer
headquarters at Hay Lake.

Utility Infrastructure

The most elaborate utility infrastructure on the ranches is probably the series of water systems developed over the years by the ranchers to capture and run water through strategic areas of the ranches. The significant water system on the Bar T Bar includes Tremaine Dam and Lake, located in the Hay Lake area, which has been used for irrigating pasture land. The Chilson Ditch project routes water from Soldier Annex Lake through Chavez Pass, to Dog Valley and eventually near Meteor Crater.

There are no naturally occurring lakes on Anderson Mesa and all of the permanent water available for livestock grazing and wildlife are the result of the ranchers' work over the years. These improvements include stock ponds, dams, ditch systems, and pipelines. One account of early water development describes the efforts of Mr. Beasley and Hart Cattle Company in 1901-03 to divert Beasley Draw, now known as Kinnikinick Canyon into "Lake Borne", now known as Kinnikinick Lake. Yeager Lake, Mud Lake, Corner Lake, Breezy Lake, and Ducksnest Lake are examples of stock ponds that were created by building small dams 2-3 feet in height to capture rain, snowmelt, and runoff.

The provision of residential utilities is very limited. The Bar T Bar summer headquarters and the Flying M main headquarters rely on generators for electricity. Electric service is available to the Flying M summer headquarters on Anderson Run and the Bar T Bar winter headquarters near Meteor Crater. Water is available from several on-site wells. A high voltage transmission line traverses a portion of the western part of the RPA carrying electricity from the Navajo Generating Station near Page to the metropolitan Phoenix area. A transcontinental fiber optic line runs across the northern portion of the Bar T Bar property.

Circulation

Given the location of the planning area on the Coconino National Forest, the land is used more by visitors than the ranchers. The amount of traffic generated by these recreationists has great impact on the roads, which receive only minimal maintenance. Most of the roads are either Forest Service system roads, ranch roads, or social roads created by recreation users with ATVs and other off road vehicles.

Paved roads in the RPA include State Route 87, Mormon Lake Road (FH 3), and Meteor Crater Road from the I-40 interchange to Meteor Crater. Meteor Crater Road and Anderson Pass Road are both included in the county road system as farm-to-market roads, with very limited maintenance.





ECONOMIC OPPORTUNITIES

M

My experience with the Diablo Trust has convinced me that family ranching is the best hope for the rangeland of the Southwest. If they are driven out, I believe much of this land which I love will be either allowed to deteriorate through erosion and other symptoms of death or turned into senseless subdivisions.

Norm Wallen, Diablo Trust

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VALUE ADDED BEEF

Ranchers are among many in the agricultural business that provide a basic resource to the country's food supply, but do not create the final product from which the majority of profit is generated. Many agricultural businesses have been taken over by large corporations which take a resource through all stages of production using economies of scale to consistently earn a source of revenue. The story of the Western rancher, however, is unique in this situation as the cost of production has increased, the animal units that can be sustained has decreased, and the end product price has remained fairly constant over the last forty years. Ranchers continue to struggle with the ability to maintain grazing allotments in accordance with federal and state regulations, the concerns of environmental and wildlife protection groups, in addition to a long term drought especially in northern Arizona. Coconino County has seen several large ranches convert from agricultural use to unsubdivided land developments of 36 to 40 acre ranchettes, which permanently alters the appearance and character of landscapes throughout the County.

In an attempt to make the ranching business more economically stable, a few progressive groups have worked (on a smaller than corporate scale) to not just raise beef for feedlot production, but take the product all the way to the finish line. As Americans become more aware of what they eat, where it comes from and how it is produced, ranchers and farmers have found a way to direct-market their products. Some have pursued direct-marketing on their own on a small scale within their community, while others have created co-ops of producers that have had success on a large scale. These examples show that the ability to generate higher revenues from beef is possible on a smaller scale, but several variables directly impact the ability of a rancher to achieve success. The process of direct-marketing is not merely limited to beef, but could also include sheep and goats, as well as

other products that may be grown or raised on the ranch. No matter what route is taken and what resources are available, this approach to adding value to an existing product takes a wealth of knowledge, energy, creativity, and commitment. There are many resources available that have information regarding the production and marketing of niche products.

Examples

There are a number of examples of the different experiences of direct-marketing projects specifically focused on the production of beef. A local effort that was undertaken by Babbitt Ranches serves as a model for a new approach to direct-marketing in northern Arizona. This local effort experienced limited success even with a number of constraints that affect this area including processing and packaging. Other ranchers have combined their efforts by creating a co-op to save their ranching heritage in Oregon and increase profits for future generations. These ranchers have modeled their business operation after a Japanese form of enterprise where several businesses combine together to have more control over all aspects of production. There are also a number of small individual ranches that direct-market their products on a smaller scale with substantial success. Each of these producers has found a unique way to communicate with their consumers and provide exceptional products.

Several years ago the Babbitt Ranches started selling beef products locally in an effort to generate additional revenue. Their products were limited strictly to frozen hamburger patties and beef jerky. The hamburger patties were successful and generated substantial sales primarily from local Basha's Food stores. When the Babbitt Ranches began this process they contacted a local natural food store that agreed to sell the frozen hamburger patties. However, by the time the product was available the store had changed its policy to sell only fresh meat excluding all frozen products. Another distributor was located making the frozen meat portion of the operation a success. The beef jerky portion of the business was a much more difficult endeavor. In order to be placed in stores (convenience and grocery) the product must go through a distributor. The competition in this market proved too difficult to continue this portion of the operation. Eventually the frozen patties were discontinued due to increasing competition in this niche market.

Oregon Country Beef™ is the brand name for a group of Oregon ranchers who market beef products together to maximize proceeds back to the individual rather than having the organization itself acquire capital assets. The process is market-driven and producer-controlled from start to finish. All beef cattle are under the direct ownership and stewardship of the individual co-op member. The brand name does not carry beef from traders or outside sources in order to supplement their production. All parts of the meat production are planned out in advance so that a supply of meat is available year round and ranchers can rely on a set price when it comes time to bring their cattle to the feedlot. The cooperative is made up of 40 family ranches caring for approximately 33,000 mother cows which graze on approximately 2.5 million acres of central and eastern Oregon rangeland that is unsuitable for crops. To assure quality and consistency each ranch takes turns placing 800 pound feeder cattle in a common feedlot for a 3 to 4 month finishing. These animals are then processed in a USDA plant.

Branding Day on the Flying M





Ervin's Natural Beef™ is run by Will and Jan Holder of Safford, Arizona. In an attempt to make their small ranch operation solvent they pursued a direct-marketing approach that eliminated the middle man. They expanded their market from their hometown to the larger metropolitan areas of Tucson and Phoenix and local organic buying clubs. They have produced promotional materials on "How to Direct Market" beef. They strongly support developing a "niche" in the marketing plan.

Another smaller scale operation is a ranch direct program in Virginia run by Joel Salatin who has written several books on direct-marketing and sustainable agriculture. Mr. Salatin has a unique approach that can overcome many of the obstacles that direct-marketers can face in terms of processing and packaging by selling the beef live to the consumer, which they have processed elsewhere. However, this process will not work for larger scale production.

Product

When developing a direct-market product it is important to understand who the consumers will be and exactly what they will need. There are a number of ways to distribute a locally produced product within a community. Farmers markets, food co-ops/buying clubs, and community supported agriculture (CSA's) all give the rancher more flexibility in offering products to the public. When producing for local grocery stores and restaurants, the consumers are less flexible and expect a certain type and standard of product. To develop a successful direct-marketing program all of these consumers may be involved.

Fresh versus frozen appears to be the most significant question when direct-marketing beef. While the taste of the beef is relatively unaltered by the freezing

process, some consumers and distributors will not accept frozen products (generally natural food/upscale grocery stores and high-end restaurants). Frozen products are easier to produce and regulate. Fresh product is more difficult to produce in terms of timing, supplies, processing, and distribution. It is important before embarking on a direct-marketing project that the consumer's needs are understood in terms of amount of product, type of product, and timing.

It is necessary to have someone knowledgeable about the range of products that can be produced including meat cuts and uses. The operations discussed above show that it is possible to sell certain products only or to increase the creativity for selling just about everything that can be used from the beef source. Of course the more products that are created the more difficult the production and the more knowledge is required, not just of the cuts of meat that are possible, but how to cook those products. In order to market a product successfully it may need to be displayed in a fashion that is appealing to the consumer such as providing easy recipe ideas or manipulating the product by adding something to increase appeal.

Marketing & Distribution

The most important element to any direct-market business is its marketing plan. The direct-market product must find a “niche” market—consumers willing to purchase a similar product at a premium price because it is produced in a socially and environmentally conscious way. The fact that a product is locally produced could be enough reason for a local restaurant to purchase products. The Center for Sustainable Environments at NAU has been supporting the direct-marketing of products by local ranchers and farmers for some time and has created a label Canyon Country Fresh™ which can be used by local producers in a direct-marketing project. The Center for Sustainable Environments is encouraging consumers to buy locally through a marketing campaign. This campaign, while not specific to the individual products available, is really opening the market for these products. This campaign is one large step forward for any rancher or farmer wanting to direct-market a product.



There are a number of ways that beef products could be sold to the public. There is always the potential for ranchers to set up sales on-site similar to Young's Farm in Dewey, Arizona. They not only sell products but also provide entertainment on a large scale. This model could be refined in order to reduce the impact on the ranchers. Sales could be combined with other tourist activities that could occur on the ranches. Farmer's markets present a possible alternative for the sale of beef products, however it can be time consuming and is more successful when ranch representatives themselves sell the product. Farmer's markets are generally seasonal events, but may be a way to simply get out the word about the product and its availability. There are a number of other options such as food co-ops, Community Supported Agriculture (CSA), and buying clubs that may purchase locally produced beef. All three currently occur within the Flagstaff area. There is also the potential to sell directly to local restaurants and natural food stores. Mail order/internet sales within and outside of Arizona are a potential provided a USDA inspected plant is used.

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The Diablo Trust RPA is about protecting the landscape's intrinsic ecological and economic values. It is about land, but it is also about community and productivity. Ranching is one of the few economic activities that produces food by keeping a landscape wild, diverse and resilient. The Canyon Country Fresh network of restaurants and markets is eager to assist ranchers in the RPA with marketing the heritage value and conservation benefits of the way they produce their beef.

Gary Paul Nabhan, PhD.
Center for Sustainable Environments

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Distribution needs and costs will vary greatly depending upon the size of the market area and the type of product provided. There are third party distributors which greatly increase the cost of the product. They are one of the middlemen that direct-marketers may want to avoid in order to keep the product reasonably priced. However, this means more work for the rancher in terms of keeping in touch with the consumers and their schedules while trying to balance deliveries. This process becomes even more complicated when consumers are requesting a fresh product.

Niche Markets

There are a number of ways in which a rancher can market a product that makes it special and unique in order to get a consumer to pay a premium. The commodities industry quite frequently uses labeling to promote products. The label makes the beef appear to be above average in standard. However, it is the same grade of meat sold in other national chain supermarkets which consist of select or above. There are regulations regarding labeling so the commodities industry has to be much more ambiguous about their products in order to truthfully market them.

The rancher can provide a meaningful label and marketing program that not only describes the product but how it is raised and how the ranch land is maintained. Other niches to consider could include heritage breeds or organic or grass-fed beef. Of course, in order to consider these niches, that is exactly what has to be produced.

Heritage breeds are unique, because many have been brought back from near extinction and have a story that intrigues the customer. Anderson Ranch in Texas direct-markets Criollo Beef which it represents as the first cattle brought to the new world by the Spanish and is considered a “native cattle.” In order to sell a type of beef that may not be well known it is important to provide detailed information about why this particular beef is special.

Grass-fed beef is another label that has become attractive to consumers. This beef can have fewer calories than grain-finished beef, and it is reported to contain higher levels of Omega-3 fatty acids and other vitamins. This type of information appeals to the more health conscious consumer. Grass-fed beef is harder to produce year round and may require moving animals to different locations throughout the year. The organic label, which is also highly sought after by consumers, is subject to government defined standards. The cattle must be maintained in smaller regulated areas and everything that is consumed by the cattle is scrutinized. Other labels that would help direct-market are chemical-free, sustainable production methods, locally-produced, from a family farm, and so on.

Local Constraints

The lack of meat processing facilities has been a considerable constraint to direct-marketing meat in northern Arizona. In 2005, the closest processing facility is in Chino Valley, approximately 100 miles from Flagstaff, and is a state licensed facility. The facility has just completed an expansion and can kill up to 15 large animals in a day and can process up to 12 such animals in a week. They have freezer storage space for up to 35 animals. Standard hang time is between 12 and 14 days, but the operator expressed the possibility of longer hang times if needed. Arizona state



meat inspections follow the same rules and regulation as federal USDA inspections. The only difference between the two is that a state inspected plant may only sell products within Arizona. A USDA inspection would allow product sales to expand out of state. Processors on the smaller scale may be reluctant to attempt to have USDA inspections due to a more complex process.

Another feature that the USDA process adds to the marketing of beef is the grading process. The grading of meat such as prime, choice or select has nothing to do with the inspection process, but rather aids in the marketing of beef. While most consumers are aware of these grading standards when purchasing meat in a local grocery store, it is unlikely that one could identify the grade of meat available. The consumers that appear to pay much closer attention to grade standards are restaurateurs who often label grades of meat on menus and may alter the price of a meal based on grade. It is possible for a USDA grader to come and grade meat processed at a state plant, but it can be extremely expensive as the price is set per grade, per animal.

The location of the current state-licensed facility may also pose a constraint to some ranchers in northern Arizona. A processing facility located closer to the ranches would increase the profitability of direct-marketing beef and would create a better opportunity for producers to provide a fresh product. While the location of the existing state inspected facility is close enough to use for a direct-marketing project, it has limitations on the amount of animals that can be processed. This processor appears to be willing to grow with the direct-marketing projects in the area, and this represents a good first step in pursuing a local meat product. It is unlikely that a direct-marketing project will start off with a large quantity of animals as a consumer base would need to be developed as well as a product reputation.

Another constraint that could affect a direct-marketing project is the need to expand the local market. In order to achieve success a rancher may need to seek out a broader market which could extend beyond the northland areas into Phoenix. The population base alone would easily support a direct-market product. There are a number of farmer's markets and other outlets that could be pursued in other areas. However, this will increase distribution costs, but the profit margin may be beneficial enough to support such an expansion. There is always the ability to expand the market through internet and mail order sales, but without USDA inspection, these sales would be limited to Arizona.

Planning & Zoning Issues

There are a few zoning issues in relation to pieces of the whole direct-marketing package that would need to be addressed if established within the County. A successful direct-marketing project would depend greatly on the resources needed to process and package the meat. Prior to processing, the cattle (or other meat source) must be finished, which generally occurs on a feedlot also known in zoning terminology as a concentrated animal feeding operation. Lastly, it could be possible for a rancher to pursue on-site sales of products developed on the ranch and within the region.

The most significant issue would be the development of a meat processing facility. The *Coconino County Zoning Ordinance* allows such a facility in the industrial zone under a conditional use permit. There are currently no such facilities



(top) Roundup on Anderson Mesa 1979.
(above) Cows crossing Diablo Canyon in heavy snow.

VALUE ADDED BEEF

GOAL

Maintain the historic ranching land use base by expanding the local market potential for beef raised in northern Arizona.

POLICIES

The County will work with meat processors to identify locations that will provide opportunity for local ranchers as well as ensure the protection of adjacent residential areas.

Meat processing plants shall be evaluated on the size of the operation, employee base, and feed lot operations.

Feedlot operations should be located to ensure that adjacent residential areas are not impacted by odor, flies, or noise.

The County will work with ranchers who wish to promote marketing and sales of locally produced items on-site to ensure that adequate facilities are provided for members of the public.

under County jurisdiction. The intent of a conditional use permit is to make the project site-specific to ensure that adjacent parcels or properties are not adversely affected. In order to provide a facility within closer proximity to the ranches an area would have to be rezoned for such a use. Rezoning is based on compliance with the *Comprehensive Plan*. A processing plant location is not only dependent upon zoning, but also the resources needed to support its operation. Water plays an important part in processing, and would need to be readily available for use. Employees will be needed to operate the plant.

Feedlot operations are permitted with the issuance of a conditional use permit within the agricultural zones currently covering most ranches within the County. These operations would be reviewed by the County to ensure that adjacent residential areas would not be adversely impacted. The concern with feedlot operations is the dense concentration of animals within a small area increasing odors, flies, and noise. Most ranches have ample space to maintain such an operation.

An on-site sales operation would require improvements to support public visits to the site. The zoning requirements would vary depending upon the scale and development. Sales associated with temporary uses could be approved through a conditional use permit while more permanent operation/facilities could require a rezoning. Direct-market sales may not be enough to attract the numbers of consumers to the site, but in combination with other possible tourist uses may benefit each use.

Next Steps & Contacts

The first step in pursuing a direct-marketing project would be to develop a business and marketing plan. This plan would outline the finite details of pursuing a direct-market project. How the product will be developed and under what standards should be identified. For example, the cattle would be primarily grass-fed with a limited feedlot operation in order to provide a consistent product. The development standards will help set out the cost of producing and finishing the cattle which can then be incorporated into the cost for processing and packaging as well as travel and distribution costs. Whether or not the rancher will hire additional staff to assist in the operation should be considered. As these details become more defined, it is easier to set a price based on the necessary profit margin. The ranchers may want to approach the economic and marketing departments at NAU to discuss the potential of a class project for the development of a business plan in order to keep costs low in the initial phases of investigation.

There are many resources that have information about direct-marketing beef products. Locally the ranchers could work with the Center for Sustainable Environments at NAU which has already offered assistance with marketing, and has information on consumers wanting to purchase a locally produced product. This would be an important first step in understanding what the local market is expecting. The appendix to this document lists current direct-marketing projects and contacts who may be able to share their experiences with prospective producers.



Yeager Lake on Anderson Mesa.

TOURISM, RECREATION & EDUCATION

Ranch-based tourism, recreation, and educational activities collectively represent great potential as an economic development tool that could contribute to economic diversification and long term sustainability of ranching operations. Tourism and travel is a significant industry, and the segment of the tourism industry that is based on the natural environment, or ecotourism, is the fastest growing segment of the tourism market. The market includes both domestic and foreign travelers who are looking for travel experiences that combine cultural and natural resource elements, as well as the conservation of those resources for the long term.

The culture of ranching, along with the natural resources and environmental qualities of the ranch lands, can provide opportunities for a wide range of potentially attractive tourism-related uses. Ranching has been called the “mythological heart of the West” and there are large numbers of people who are interested in experiencing ranch activities first hand. While there are numerous examples of traditional dude ranch resorts that offer a variety of recreational experiences from horseback riding to tennis, there is also a trend toward vacation ranches that offer visitors the opportunity to experience life at a real working cattle ranch.

This section of the plan explores a variety of potential tourism, recreation, and educational opportunities that could be compatible with and complementary to working ranch operations, and specifically discusses a number of case studies of ranches that have successfully pursued ranch-based commercial enterprises of this type. In addition, the plan identifies certain regulatory issues and permits that would be applicable to such activities, as well as a number of resources and consultants that are available to assist ranchers in pursuing their economic goals and ranch preservation.

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Experiential tourism is a marriage of economic development and conservation, where both, often seen as competing interests, are in fact inextricably linked.

Fermata Inc. web site

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(top) Diablo Trust “Artist Day on the Land.”

(middle) Hot air balloons.

(above) Line camp.

Tourism, Recreation, Educational Opportunities

The pursuit of commercial tourism and recreation-related enterprises is clearly not every rancher’s cup of tea. It takes a certain temperament and disposition to deal with these types of service oriented businesses that are very different from ranching in many ways. However, for those ranchers who are so inclined, opportunities abound for taking advantage of the market demand for land-based tourism and recreation, as well as cultural and educational experiences that can be compatible with and sometimes directly related to ranching operations.

For those ranchers who are not inclined to operate such enterprises themselves, there may be opportunities for licensing certain activities on the land that would be operated by independent concessionaires. The obvious down side of licensing such uses is that the licensee receives the greater economic benefit compared to the rancher. Another concern is that concessionaires may not have the same concern for the land as the rancher.

Examples of ranch-based tourism, recreation, and educational uses can be further categorized into the following types:

- **Guided Tours/Field Trips** can focus on various themes including birding and wildlife, archeology or prehistoric rock art, astronomy, photography or art on-the-land, scenic tours, hikes, mountain biking, guided hunts, and others. The most appropriate themes to pursue depend primarily on the type of resources available, but also on the personal interests of the ranchers as well as an economic analysis that would assess the potential market demand.
- **Equestrian Activities** can include anything and everything horse-related from horse boarding and training to commercial breeding to guided trail rides to roping events and rodeos. In addition, a more specialized focus could include youth horseback riding camps, women’s riding retreats, or guided family pack trips.
- **Lodging** on the ranch can include a wide range of facilities from the traditional dude ranch operation providing full-service family vacation programs to a work oriented ranch-stay program offering opportunities to experience the life and work of a real working cattle ranch. Other lodging opportunities could include individual cabin rentals such as remote line camps, or more formalized bed-and-breakfast operations at ranch headquarters. A somewhat unique approach to lodging accommodations could include yurts, a circular tent-like structure originating in Mongolia. Yurt and cabin rentals have been successful at Lyman Lake State Park, and the Arizona State Park system is planning on adding yurts and cabins at other state parks. Lodging can also be combined with other educational or specialized focuses such as retreat facilities available for business seminars, organizational team-building, health, art, or other special topics.
- **Festivals/Special Events** could be offered with a focus on traditional Old West-style chuck wagon cookouts, cowboy poetry or music festivals, antique tractor shows, mountain man rendezvous, or other such events. Some guest ranches have even had success with certain nontraditional events and activities such as hot air ballooning.
- **Cultural/Educational Institutions** could potentially include a museum or cultural center devoted to one or more themes such as the history of ranching,

Native American culture, astronomy, archeology, geology, paleontology, alternative energy, Route 66, or the history of the transcontinental railroad. Other ranch-based educational institutions could include backcountry education programs similar to the Outward Bound program, Adventure Discovery, or the National Outdoor Leadership School. Programs for at-risk youth could fit in this category as well.

- **Other Uses** that do not fit into any of the previous categories include shooting ranges and off-highway vehicle facilities. Both of these examples are uses for which there is great demand, but which are difficult to site because of potentially negative effects on surrounding properties. Ranch lands may include suitable sites where a shooting range or off-highway vehicle facilities could be situated without nearby neighbors and without the typical conflicts that arise from such use. A shooting range in particular has long been identified as a need in northern Arizona, and with a proposed location near Bellemont eliminated from consideration, there may be an opportunity to investigate other options in the Diablo Canyon RPA, possibly in partnership with the Arizona Game and Fish Department.

These examples do not represent an exhaustive list by any means, but represent examples of ranch-based enterprises that have been pursued by ranchers at a variety of locations throughout the country and which may have some applicability in northern Arizona. Whether these specific uses or similar uses could be successfully pursued here largely depends upon the personal interests and enthusiasm of the ranchers to pursue them.

Ranch-Based Tourism Case Studies

There are numerous examples of ranch-based tourist enterprises that have successfully pursued economic development opportunities as a strategy for maintaining viable ranching operations. While some have switched their focus entirely to tourism-related pursuits, others have simply augmented their livestock operations with compatible commercial enterprises while maintaining a working ranch. The following are just a few examples. Additional contact information is provided in the appendix.

The **Anderson Ranch**, located in Hemphill County in the Texas panhandle northeast of Amarillo, offers guided birding tours on their ranch along the Canadian River. The owner of the ranch entered into a partnership with the town of Canadian, Texas to pursue tourism as an economic development strategy. Together, they formed a nonprofit organization and hired a consultant to develop a business plan. The ranch conducts guided birding tours for groups of 15-20 people at a rate of \$50-60 per person. The tours are conducted by the ranch owner or a ranch employee. No accommodations are available on the ranch, but are available in the nearby town of Canadian. The ranch also markets value-added beef products.

The **Elkhorn Ranch**, located in the Altar Valley in Pima County southwest of Tucson, is a more traditional vacation dude ranch. It is a family-run operation established by the Miller family in 1945 as a winter vacation destination to complement their summer vacation ranch in Montana. The Elkhorn offers a traditional dude ranch experience with a wide range of activities including horseback riding,



(top) Camp cookout.
(middle) Cowboy music festival.
(above) Old Route 66 on the Bar T Bar.

birding, hiking, tennis, swimming pool, cabins, buffet-style meals, and Western-style cookouts all in a classic Sonoran Desert environment.

Equitours, located on the **Bitterroot Ranch** in Fremont County, Wyoming southeast of Yellowstone National Park, offers trail riding and pack trips on the ranch as well as international horseback riding vacations on six continents. Their international trips include palace-to-palace rides in India, bed-and-breakfast rides in Ireland, and horseback trips in France staying in historic chateaux on the Loire. Equitours was founded by ranch owner Bayard Fox 30 years ago on the Bitterroot Ranch. The Bitterroot remains a working ranch in addition to offering dude ranch accommodations and equestrian vacations.

The **King Ranch**, located in Kleberg County, Texas southwest of Corpus Christi, is an economically-diversified agribusiness corporation involved in cattle ranching, feedlot operations, farming, citrus groves, commodity marketing and processing, recreational hunting, retail, and tourism. Their tourism enterprises include guided nature tours focusing on birding and south Texas wildlife. They offer a variety of birding tours for groups or private customized tours for specific interests including wildlife, native plants, photography, history, and agriculture. In addition, the ranch operates a retail outlet and visitor center.

The **Rock Art Ranch**, located in Navajo County southeast of Winslow, features prehistoric rock art and Western-style cookouts. Prehistoric petroglyphs are located along a quarter mile stretch of canyon where visitors can hike into the canyon or view from an observation deck on the rim. Accommodations are available on the ranch with steak cookouts and cowboy music provided. The ranch was formerly part of the historic Hashknife Ranch and contains the last known bunkhouse from the Hashknife.

The **Grand Canyon West Ranch** is located on the Hualapai Indian Reservation in Mojave County, Arizona. The ranch represents an economic development strategy of the Hualapai Tribe. In addition to being a working cattle ranch, the Tribe offers Grand Canyon tours with helicopter access from Las Vegas, horse-drawn wagon rides, and Western-style barbecues.

The **Williams Family Ranch** in Wickenburg, Arizona bills itself as a real working cattle ranch, "...not a fancy dude ranch." They offer three-day to week-long vacations for folks who want to experience the life and work of a cowboy. The ranch accommodates guests from September through May, and activities can include moving cattle to new pastures, round-ups, and branding. Other activities include cowboy crafts, trail rides, and hunt and pack trips in the Hassayampa River Wilderness.

The U. S. Forest Service's **Arizona Rooms With a View** program offers cabin rentals at seven locations on four different national forests in Arizona. Although this is not a ranch-based program, it is included as a case study because of its potential similarity to the rental of ranch line camps. The Forest Service program includes seven cabins formerly occupied as fire guard stations and other administrative sites located in a wide variety of habitats from upper Sonoran grasslands to mountain meadows to mixed-conifer forests to creek-side riparian areas. The various settings provide opportunities for wildlife viewing, hiking, mountain biking, cross-country skiing, hunting, fishing, and solitude. The Forest Service has experienced a positive response from the public and respectable occupancy rates with a minimal amount of advertising.





Bar T Bar horses at Dog Valley.

Regulatory Issues/Permits

In Arizona, ranching is statutorily exempt from county zoning authority. However, other types of commercial uses located on ranches would be subject to county zoning jurisdiction. Given the nature of many of the potential tourism and recreational uses discussed in this plan, it is likely that regulatory approvals would be required from several levels of government, including various county, state and federal agencies.

In Coconino County, virtually all ranch lands are located in the General Zone, which allows very low density residential development, as well as agricultural-related uses. Certain recreational uses, educational facilities, and limited quasi-commercial uses are possible in the General Zone with approval of a conditional use permit as specified by the *Coconino County Zoning Ordinance* (Sec. 9). Other potential ranch-based commercial uses may require rezoning to a special purpose zone such as the Resort Commercial (RC) Zone.

The County Building and Safety Division administers building codes through the issuance of building permits and building inspections. The Environmental Services Division of the County Health Department regulates on-site wastewater disposal systems, as well as commercial food service operations and lodging facilities serving the public.

At the state level, the Arizona Division of Health Services has regulatory oversight of youth camps, and other state agencies could be involved in various



Bar T Bar winter range.

ranch-based enterprises. For example, any activities occurring on state trust land would require the appropriate commercial lease permits from the State Land Department, and wildlife-related activities would require applicable permits from the Arizona Game and Fish Department. Likewise, any commercial activities occurring on national forest land would require special use permits from the U.S. Forest Service.

The specific permits and regulatory approvals for any given use should be identified through the process of developing a business plan or economic feasibility study for the proposed enterprise. The Coconino County Community Development Department can provide direction in this regard, and typically identifies applicable regulatory requirements as part of the zoning review process on private and state lands.

Tourism Development Resources and Consultants

There are a number of resources and consultants available to assist landowners in the development and implementation of business plans in the area of culture- and resource-based tourism. In addition to government agencies such as the Arizona Office of Tourism, charged with promoting tourism development in the state, there are private consultants who specialize in ranch land preservation, ecotourism, and nature-based experiential tourism. Such consultants offer a wide range of services including assistance in site assessments, economic feasibility studies, and the development of business plans. The following are a few examples of resources and consultants that could assist the ranches of the Diablo Canyon RPA in pursuing tourism development strategies described in this section of the plan. Additional contact information is included in the appendix.

The **Arizona Office of Tourism (AOT)** is responsible for promoting Arizona as a premier tourist destination. It accomplishes that mission through strategic planning, advertising and media relations, research and grant administration, and other tourism development programs. The Tourism Development Division promotes rural tourism development programs in cooperation with the Arizona Council for Enhancing Recreation and Tourism (ACERT), and promotes niche marketing in several categories with distinguishing features unique to Arizona. The AOT has contracted with the Arizona Hospitality Research and Resource Center (AHRRC) at NAU to serve as a clearinghouse for tourism and hospitality research.

The resources available through various AOT programs could be applied to the development of economic feasibility studies and business plans for a variety of ranch-based tourist enterprises. Three of the five niche categories that AOT has identified could be applicable to tourism development in the Diablo Canyon RPA, including Culture and Heritage, Nature and Adventure, and Resorts to Ranches. In addition, the Research Library at NAU's AHRRC houses research reports and data including statistical information on Arizona visitors and the tourism industry.

The **Institute of EcoTourism** (IOET) in Sedona is “...committed to solving environmental problems by promoting environmentally conscious tourism, sustainable community development and experiential, place-based environmental education (IOET website).” The IOET recognizes that ecotourism and nature-based tourism is today’s fastest growing market segment, and the Institute has developed educational programs and conservation models for environmentally conscious tourism and sustainable business operations. The IOET works closely with members of the travel industry to promote sustainable ecotourism operations by providing training and information on best-practices. In addition, the IOET offers a variety of field-based seminars through their Explorer’s Club, and there may be some opportunity for partnering in such efforts between the Institute and the ranches of the Diablo Canyon RPA.

One of the most promising business consultants working in the field of nature tourism is an organization known as **Fermata, Inc.** based in Austin, Texas. Fermata has over 30 years of experience in the business of wildlife watching, conservation programming, and nature tourism development. The firm works with various government agencies, organizations, communities, landowners, and individuals interested in developing and implementing nature- and culture-based experiential tourism strategies. A wide range of services is offered including strategic planning, economic impact studies, feasibility studies, marketing plans, fund raising plans, proposal development, workshops on resource-based tourism, resource-based tourism development planning, nature tourism training, guide and site manager training, and design of interpretive materials.

Another consultant specializing in the preservation and stewardship of ranch lands is the Sheridan, Montana-based **Ranches of the West**. Self-described as “Consultants to and for Recreation and Agricultural Enterprises,” the firm’s stated mission is “to create and maintain sustainable resources (Ranches of the West website).” Their fundamental goal is to assist owners in achieving a blend of economics, ranch preservation, agricultural operations, and recreational enjoyment. The firm recognizes that each ranch has its unique characteristics and qualities that must be considered along with the personal goals of the ranch owner. Services include the creation of a complete business plan to address financial management, fisheries, habitat, agriculture, livestock, conservation easements or other preservation devices, and in some cases, limited resource-oriented development and construction planning and implementation.

Next Steps

There is clearly a wide range of options in the area of tourism and recreation that could provide an economic means of paying for conservation and stewardship of the ranches’ resources and contribute to their economic sustainability. If the ranches decide to pursue this possibility, the next steps could include initial discussions with a tourism consultant who specializes in ecotourism development. An ecotourism development consultant could begin with an initial inventory of resources to help identify special natural and cultural attributes that could be developed in an economically beneficial and environmentally sustainable way. The initial resource inventory would then be followed by further strategic planning, economic feasibility studies, marketing plans, and finally a complete business plan.

TOURISM RECREATION & EDUCATION

GOAL

Encourage ranch-based tourism, recreation, and educational enterprises that are compatible with and complementary to working ranch operations.

POLICIES

The County supports environmentally conscious tourism that promotes the conservation of cultural and natural resources for the long term.

Approval of tourism-related uses shall address minimum requirements necessary to promote the public health, safety, comfort, convenience, and welfare. Typical public health and safety requirements, e.g. access, parking, sanitary facilities, emergency response, etc., shall be considered in the context of the scale and character of the proposed use.

The County shall help facilitate interagency coordination in the review and permitting of proposed ranch-based tourist enterprises in order to ensure that all applicable agencies’ concerns and requirements are addressed.

New structures or other development associated with tourism-related uses should incorporate appropriate “Western” or rustic design features that reflect the cultural context and heritage of the ranches. Typical urban development requirements may be modified or relaxed to achieve a ranch-appropriate design.



Timber resources on the ranches' national forest grazing allotments.

WOOD PRODUCTS

Commercial wood products have historically played a somewhat minor role in ranch economics, primarily through the sale of fuelwood as a byproduct of range improvement or restoration treatments. Piñon and juniper (PJ) fuelwood sales have been the principal commercial wood product generated by the ranches. Fuelwood production and sales, however, has generally not proven to be a commercially viable business due to high labor costs and low profit margin.

This section of the plan discusses the availability of raw materials that may result from range and watershed improvement projects; products that could be produced with existing or emerging technology; constraints and obstacles that would have to be overcome; and related regulatory and permitting issues that would be applicable to the development of a wood products industry in the RPA region.

Resource Availability

Various range management practices involve the removal of wood materials that have potential economic value. PJ thinning projects are undertaken to open the woodland canopy to enhance browse and restore grasslands, restore springs, and recreate savannah conditions (treed grassland) where appropriate. Depending on the methods used, the costs of such treatments vary, but can be substantial. Ideally, a decent economic return from wood products could help offset the costs and pay for additional treatments.

The ranch lands are divided into six biological zones each containing characteristic plant and animal communities (*Executive Summary of the Diablo Trust Range Management Plan and Proposed Action*, p.13). The potential for utilization of

timber and woodland species for wood products would be limited to the west and west-central portions of the RPA (i.e. Zones I, II and III). With the exception of Zone III, most of this area is national forest land.

The high elevation area identified as Zone I (6,700 to 7,600+ feet) is located in the far west and southwest end of the RPA, and is dominated by ponderosa pine, Douglas fir, white fir, aspen, maple, oak, and alligator juniper, with some fingers of PJ on the east side. Approximately 88% of Zone I is on national forest land.

The next biological zone to the east (Zone II) is slightly lower in elevation (6,200 to 7,660 feet) and dominated by PJ and western wheatgrass. The northern half of Zone II is open grassland with some PJ invasion. The southern half was once open savannah, but is now dominated with dense stands of PJ with little understory vegetation. Approximately 98% of Zone II is national forest.

Zone III extends to the central portion of the study area (5,600 to 6,300 feet) from below the rim of Anderson Mesa to the north and east. Vegetation is a mix of PJ woodland, grassland, and browse. The previously open savannah is now dominated by dense stands of PJ with closed canopy and little understory. Most of Zone III is state and private land.

Further to the east, Zones IV and V are the lowest in elevation and the driest portions of the RPA. Vegetation is browse-dominated grassland and grass and isolated shrubs. Due to a lack of woodland and forest vegetation, these areas are not applicable in the discussion of wood products. Zone VI, which includes riparian areas within all five other biological zones, may contribute to the wood products resource base where trees would be removed for watershed restoration purposes.

The forest and woodland species of ponderosa pine, piñon pine, and juniper are the most prevalent species and therefore the most likely to be utilized for commercial purposes. Historically, from the late 1800s through the 1980s when there was a large-scale wood products industry in the region, ponderosa pine was the most predominant commercial species coming off the Coconino National Forest. PJ has less commercial potential, but has traditionally been a large part of the local fuelwood market.

Commercial Wood Products

Potential wood products range from those requiring minimal processing, such as fuelwood and roundwood (i.e. logs, poles, fence posts, etc.), to value-added products requiring more involved manufacturing processes. Some products, such as manufactured fireplace logs and wood/plastic composites can be manufactured from various species. Other products such as dimensional lumber, laminated beams and other structural grade products would be limited to ponderosa pine or other large conifers. A biomass fueled electrical generating station could potentially use any type of woody biomass regardless of species.

The Greater Flagstaff Forests Partnership (GFFP) has recognized the need to promote the commercial utilization of small diameter wood in order to help facilitate forest restoration and fuels reduction projects in the greater Flagstaff area. Toward that end, the GFFP retained an engineering consultant to evaluate small-log manufacturing technologies, products, and markets and the feasibility of establishing a small-log processing operation in the area. Mater Engineering of Corvallis, Oregon submitted a final report on this issue to the GFFP in July, 2002 (*Restoration Resource and Investment Potential Final Report*, Mater Engineering,



For years while I was living in Flagstaff I worked with a collaborative group named the Diablo Trust that is an example of ranchers and environmentalists...working together. That group is still together and still serving as a model of the effectiveness of diverse people working toward shared goals.

Dan Dagget, author and founding member of Diablo Trust



July, 2002). The results of the Mater study identify a number of products that can be produced with small diameter material.

Ponderosa pine, particularly small-diameter material, is generally not known for great structural qualities. However, new technologies are emerging that can efficiently process small-diameter ponderosa to make products competitive with higher grade species. For example, fiber reinforced polymer (FRP) laminated beams (aka “glulams”) use a thin layer of Kevlar™ fiber laminated into the beam layers to significantly increase beam strength. According to the Mater report, initial tests suggest that this could allow the use of lower grade lumber such as ponderosa pine to produce a glulam beam equivalent in strength to a Douglas fir glulam. Further testing will be required to demonstrate the structural suitability of this product. With the use of new-generation industrial adhesives, small-diameter pine can be also used in the manufacturing of finger-joint studs and other dimensional construction grade materials as well.

Other emerging processes show promise for hardening and increasing the fire resistance of ponderosa pine. A product known as Indurite™ uses a hardening process employing an environmentally-safe solution made from soy and corn starches in a process similar to traditional pressure-treating, but more environmentally friendly. The treatment process can be applied to softwood such as ponderosa pine to make flooring and furniture that would typically require the use of hardwood material. Boric acid can be incorporated into the treatment to increase fire resistance for applications where that would be beneficial.

A product known as Sorbilite™ is a manufactured plastic/wood composite that combines wood waste (i.e. sawdust, bark, wood chips) with recycled plastic to produce a solid material that can be molded into higher value products such as cabinet doors, furniture components, moldings, signs, and other items. The resulting products can be painted or finished with a laminated veneer and is somewhat similar to Masonite™. The process can utilize a variety of species.

The Flying M has experimented with the cutting and bundling of firewood and marketing it directly to grocery stores and convenience markets in northern Arizona. It turned out to be a low-margin proposition, because of high labor and transportation costs. They have also done some preliminary product development research into the manufacturing of fireplace logs with juniper chips. The product shows promise, but manufacturing has not yet begun due to a lack of financing for start-up and initial operational costs.

Arizona Public Service (APS) is exploring the possibility of converting the coal-fired Cholla Generating Station at Joseph City for co-firing with woody biomass. Small-scale niche industries could provide another market for wood material generated by thinning and restoration projects such as the manufacturing of custom furniture and signs, and architectural components such as custom beams and vigas.

Opportunities and Constraints

Although recent studies suggest that there are opportunities for utilizing small diameter wood material for various commercial products and uses, the overriding constraint to the development of a local wood products industry is the lack of a coordinated supply from the national forests in the region. Without a coordinated and consistent supply of raw materials, investors are not willing to build the necessary processing and manufacturing facilities.



(top) Piñon pine.
(above) Ponderosa pine.

In order to increase investor confidence, resource offerings must be coordinated within the Forest Service (i.e. coordinated between individual ranger districts within a forest, as well as between different national forests in the region), and the resource offering must be relatively consistent over time. Since the Forest Service is the main source of material needed to support a wood products industry in the region, there is little likelihood of such an industry developing without the Forest Service making some fundamental changes in management practices in order to implement a more coordinated resource offering. The GFFP has initiated discussions with the different national forests in the area to promote the concept of a “Coordinated Resource Offering Protocol” (CROP) in order to address this issue and raise investor confidence in establishing a local wood products industry (*A CROP Pilot Project Design and Implementation Project for the Greater Flagstaff Forests Partnership*, Mater Engineering, March, 2004).

On the speculative side, if such an industry does develop at some point, there may be an opportunity to market “green” products originating from raw materials generated by forest health and range restoration projects. There is a huge market in Arizona and surrounding states for home construction and remodeling components, and there is a growing sustainable building movement including a trend of major retailers to market certified “green” wood products. The wood products discussed in this plan are examples of sustainable technologies in the context of harvesting for forest health, watershed and grassland restoration.

Regulatory Issues/Permits

Regulatory issues and permits with respect to wood products can be divided into two categories. The first category would be related to the harvesting of the raw materials, and the second would be related to the development of processing and manufacturing facilities. County zoning authority is the main regulatory issue on private lands, and applies to state trust lands as well, but does not apply to federal lands.

The harvesting of wood resources on private land, including thinning and other treatments, requires virtually no regulatory agency approvals. Similar projects on state trust land and national forest land obviously require compliance with the respective agency’s planning, permitting, and land management processes. The removal of wood products on the national forest typically involves competitive bidding on a timber sale or “goods-for-service” contract.

Under Coconino County zoning regulations, lumber mills can be established in the General Zone with approval of a conditional use permit. A biomass-fueled generating station would also be subject to a conditional use permit in any zone in which it would be proposed. Manufacturing and lumber processing plants would require industrial zoning, with a conditional use permit required under Light Industrial (M-1-10,000). Lumber mills and processing plants are permitted uses in the Heavy Industrial (M-2-6000) Zone.

There is currently no industrial zoning in the Diablo Canyon RPA study area. There is little potential for industrial zoning in the study area, with the possible exception of some potential sites near the I-40 corridor. A more likely scenario would be for processing and manufacturing facilities to be located either in Winslow or the greater Flagstaff area where the appropriate zoning and physical infrastructure already exists to support such uses.



(top) Commercial fuelwood processing.
(above) Woody biomass material can be used for electrical power generation.

WOOD PRODUCTS

GOAL

Encourage development of local industries that utilize wood resources derived from range and watershed improvement projects on ranchlands.

POLICIES

The County supports the economic utilization of wood resources as a means of offsetting the costs of range and watershed restoration projects and as a means of promoting economic diversification of the ranches.

Wood harvesting for economic uses shall primarily be driven by ecosystem health and habitat considerations.

The County encourages the restoration of grassland ecosystems and native habitats and the reduction of unnatural piñon/juniper woodland encroachment.

Next Steps

The development of a commercial wood products business on the ranches is dependent upon the development of a local wood products industry that would be the market for material harvested from the ranch lands. The development of that industry is largely beyond the control of the ranches. It is dependent upon some fairly significant changes in national forest management practices to facilitate coordinated and consistent resource offerings from multiple ranger districts and forests in northern Arizona.

Another possibility, also largely beyond the control of the ranches, is the construction of a biomass electrical generating station in close proximity to the ranches. A biomass plant could potentially utilize chipped wood material from range restoration projects. However, depending on the plant's location, fuel needs, and business model, it may or may not be an economically beneficial market for the ranches.

There are a variety of grant programs from various sources designed to help small scale wood products businesses become established. The USDA Forest Products Laboratory in Madison, Wisconsin, for example, has a total of \$4.4 million available for grants in FY 2005 to promote the adoption of technologies utilizing biomass and small-diameter materials. Individual awards are between \$50,000 and \$250,000. The grant program is designed to help revitalize rural communities with depressed forest-based economies by helping establish small-scale business enterprises that make use of woody biomass and low-valued trees. Funding from this or a similar program could possibly finance the initial operational costs of the manufactured fireplace log product under consideration by the Flying M. The Diablo Canyon RPA ranches should consider contracting with or hiring a grant writer to pursue funding opportunities.

Another source of technical and business development assistance is the Southwest Sustainable Forests Partnership (SWSFP). The SWSFP is a collaborative partnership consisting of local, state, federal, and tribal governments that have joined together to forge a connection between forests, communities, and forest-based industries in Arizona and New Mexico. Their mission is to help local forest product businesses develop and grow by providing technical assistance, entrepreneurial development, and grant funding. The SWSFP is a potential resource that could help develop and promote wood products businesses associated with the ranches. Their contact information is in the appendix.





Trent Mesa Wind Project in west Texas.

ENERGY DEVELOPMENT

There has recently been a surge in interest in the production of alternative energy sources. This has been driven by a number of factors including the rapidly rising cost of fossil fuels, state-by-state requirements imposed on the power generation industry for certain percentages of power to be from alternative sources, and federal and state tax incentives. While solar energy is still receiving considerable attention, the two alternative energy options that are receiving more attention in Arizona are biomass and wind. The former involves the use of woody materials that are burned to produce power. A number of sites are being considered for biomass facilities including one at the Meteor Crater interchange. Besides power generation, the main benefit is a ready-made market for slash and small diameter trees.

The interest in wind power has been sparked by the development of wind resource maps supplemented by data collected by wind measurement towers, the development of much more efficient towers, as well as the tax incentives and renewable energy standards such as California's requirement that 20% of all power generated by 2017 must be from renewable sources. Wind is the most competitive of the renewable options.

There has been a considerable amount of interest in wind projects in northern Arizona in the last two years. Wind resource maps have identified a number of sites in Coconino County as having the potential to have enough wind to justify wind projects. Two years ago the Planning and Zoning Commission approved a wind test tower north of the Meteor Crater interchange that has been collecting wind data since. Other meteorological towers have since been approved on the south side of the interstate on both the Bar T Bar and Flying M ranches. Most have been in conjunction with NAU.

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Coconino County needs to be a leader in renewable energy. This is an incredible opportunity for our county and the right thing to do.

Liz Archuleta, Chair, Coconino County Board of Supervisors

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Wind Tower Technology and the Proposed Bar T Bar Project

The technology has changed considerably since the lattice towers and short pole towers of the 1970s. The latest technology involves towers that generally range from 60 to 100 meters (200 to 300 feet) in height to the hub on which the blades rotate, and vary in production from 1 to 3 megawatts. Those currently proposed on the Bar T Bar are 80 meters or 265 feet to the hub, with the total height to the tip of the blade being 405 feet or about 125 meters. The blade diameter is 82 meters, or 270 feet. The towers are approximately 16 feet in diameter at the base and are steel cylinders. The color of the towers is off-white with somewhat of a gray tinge. The blades are made of fiberglass and turn relatively slowly. The towers are positioned in rows with a separation between towers of about 1/4 mile. Distance between the rows is about 1/2 mile. Power generation is approximately 1.5 megawatts per tower, so with 27 towers proposed on the Bar T Bar ranch and 13 north of I-40 on Hopi-owned and other private land, the total project consists of 60 megawatts. According to the developer's materials, this is enough to power 14,000 homes. The electrical collection system from tower to tower would be underground, and there would be a small substation constructed to deliver the power to an existing 69 kV transmission line that runs from Winslow to Flagstaff. The power is then transmitted to the western power grid. The power would be used to meet peak power demands and would be used wherever the power was needed. A large power company would build, own, and operate the system, and APS is presumed to be the purchaser of the power. The life of the project is intended to be 30 years. The project is only economically possible because of federal tax incentives for alternative energy development.

Benefits of Wind Energy

There are numerous reasons to support the development of alternative energy. On a national scale there is a desire to reduce the dependence on nonrenewable resources such as oil, coal and natural gas that are used to generate electricity not only because of dwindling supplies, but also to curb the pollution generated from power plants utilizing these resources. Wind energy is clean and at the present time seems to be the most economically feasible. Generating electricity from solar power is not yet competitive. Electrical generation from biomass, while on the horizon, has not yet been implemented.

At the local scale, wind energy offers an economic opportunity for ranchers and other large property owners to generate revenue from land leases and royalty payments to supplement what can be a meager income from raising cattle. The County, as expressed in the *Comprehensive Plan*, would rather not see large ranches subdivided into 40-acre lots, and the best way to ensure that this does not happen is to sustain the economic viability of the working ranches. For the proposed Bar T Bar project, the applicant estimated that the annual lease payments to the property owners would be \$220,000 averaged over the life of the project. This means about \$5,500 per tower, with a lesser amount at the beginning of the 30-year life and a larger amount at the end. This represents considerable income to the property owners that can supplement income from ranching. While there is no direct offer by the property owners in conjunction with this project and this application to keep ranches intact, an assumption can be made that every economic opportunity could forestall the sale and possible subdivision of ranches into 40-acre ranchettes.



The wind resource on the ranches holds great potential as a source of renewable energy.

County Planning Issues

The most important issue related to the development of wind towers involves scenic vistas and viewsheds. Coconino County has some of the most spectacular scenery in the Southwest, and the roadway system provides direct access through some of the County's vast landscapes. The County has been aggressive in its attempts to protect the visual integrity of the County, with a comprehensive sign code adopted in 1981, a billboard ban in 1986, and cellular tower ordinances in 1989 and 2001, with the latter having specific visual resource criteria. Along the I-40 corridor and elsewhere on the Diablo Canyon ranchlands, there are beautiful views of the San Francisco Peaks, the Hopi Mesas, and Anderson Mesa. Along the I-40 corridor, cell tower applicants have been encouraged either to look for sites on the south side of I-40 because the view of the Peaks is on the north side, or to look for sites that are at some distance from the interstate rather than right next to the highway. For the ranches, the question is one of trade-off. Given the presumption that the development of wind towers is a good thing because it can assist large property owners in maintaining working ranches in order to maintain the ranches as open space, the decision to be made is where is the best location and where will the visual impact be minimized or be less important. Generally this is at some distance from the main roads, in locations that are not in a major view corridor of the San Francisco Peaks or other major geographic features, and in areas already impacted by other development such as high voltage transmission lines.

There are other county planning issues as well as environmental issues. It appears that the proposed Bar T Bar project would have minimal impact on wildlife habitat, watersheds, or fragmentation. The existing grazing should not be affected by the project. Impacts are not expected to be significant to large animal

We need to move renewable
energy forward for the benefit
of everyone on the planet.

*Deb Hill, Coconino County Board
of Supervisors*

ENERGY DEVELOPMENT

GOAL

Facilitate the development of alternative energy projects while maintaining the integrity of the ranches and preserving aesthetics and views.

POLICIES

The County will work with prospective developers of wind energy projects to provide guidance on the best locations that will take full advantage of available wind resources but also protect viewsheds.

Wind projects shall be located at least one mile from major travel corridors such as I-40 and Highway 87.

To the extent possible, approval of wind projects shall be in conjunction with agreements to keep the ranches intact.

Monitoring for avian and other potential environmental impacts shall be a part of the approval process.

All power lines between the towers shall be underground.

To the extent allowed by the Federal Aviation Administration, there shall be a minimum number of lights on the tops of the towers.

Wind projects should be used as an educational tool to showcase alternative energy development.

If possible, a portion of the revenue derived from wind energy development should be used to assist Diablo Trust, conserve the land, do projects on the land, or otherwise work toward achieving the long term goals established by the Diablo Trust.

All wind tower projects shall include a condition of approval related to obsolescence and a required bond or letter of credit for removal of the towers.

wildlife species such as pronghorn. The main impact of concern is on birds. The subject area is not in any major bird migration corridors, and raptor and bat kills are expected to be lower than for other wind tower sites in the western U.S. According to the project proponent, the average for modern wind farms is 2.2 bird kills per megawatt per year. Of these 2.2 birds, 0.02 per megawatt per year represent raptor kills. There is also the potential for bat kills, though the bat population in the area is relatively unknown. Ongoing observation and study for the life of the project is recommended.

Wind towers are being treated the same as any public utility installation, which are therefore conditional uses in the rural zones. In the conditional use permit process, there are four findings that must be made for approval, and these are 1) that the use meets the objectives of the zoning ordinance and the purpose of the zone; 2) that the proposed use and location of the use is not detrimental to public health, safety, and welfare or materially injurious to properties in the vicinity; 3) that the proposed use will comply to each provision of the zoning ordinance except for any variances granted; and 4) that the use is consistent with the *County Comprehensive Plan*. The issues listed above are considered in the staff analysis.

Examples

There are no wind tower projects in Arizona. The Palm Springs area, the Altamont Pass area in Alameda and Contra Costa counties, and projects in Solano County, all in California, have hundreds of towers, and California leads the states with over 2,000 megawatts of wind power already developed. Other examples exist in Texas, New Mexico, Minnesota, Iowa, Wyoming, Colorado, the Dakotas, Oregon, and Washington.

Next Steps

The Bar T Bar has already negotiated an agreement for the construction of 27 wind towers on the ranch in sections located on both sides of Meteor Crater Road about two miles south of the interstate. The 40-tower project will utilize all of the available transmission capacity in the existing 69 kV line that is located north of the interstate. Currently the cost of connecting directly to a high voltage line is prohibitive. While the estimated \$5 million cost to upgrade the existing 69 kV line may be deemed too high now, if federal energy credits are extended and if the State of Arizona adopts more aggressive standards for the amount of energy that must be produced from alternative sources, there will be a continued interest in new projects or expanded projects. Both Bar T Bar and Flying M have erected meteorological towers to test the feasibility of developing additional wind projects on a variety of sites around the ranch, and this data should continue to be collected, and the property owners should closely monitor the interest in further wind development, as well as push for an upgraded transmission line network.



Moqui Ranch (above) and other ranch-owned properties throughout the national forest may present some opportunities for limited home site development.

HOUSING

The economic development alternative chosen by many ranchers across Arizona is to sell off ranchland for residential development. This is usually pursued through the state's unsubdivided lands process with the ranchland being split into 36+ acre parcels, which can typically be split down further to a minimum of 10 acre parcels in Coconino County. The result is not desirable from a land use perspective as it results in fragmented parcels across the open landscape, affects wildlife habitat, and removes land from its historic ranching economy. This type of poorly planned development also results in lack of, or insufficient, infrastructure including roads, water, and other utilities. In the case of the Diablo Canyon RPA, the property owners and the County agree that this would be an unacceptable development pattern for the ranches.

Nonetheless, identifying some of the land area for possible future residential development is not necessarily contrary to the vision and goal of the RPA. This section will identify some alternatives, examples, and issues to consider with potential residential development as an economic option.

M

When we see land as a community to which we belong, we may begin to use it with love and respect.

Aldo Leopold

-T-



The ranches own a number of inholdings in the Coconino National Forest where conservation-based subdivision design could be appropriate.

Regional Housing Market

As developable land around Flagstaff gets built-out, there will be more pressure on outlying areas for residential development.

One aspect of the rural housing market that has not been addressed is “protected development”—which is an opportunity for a rancher to sell off a limited amount of land for residential development while preserving the integrity of the ranch, and for an opportunity for someone to purchase a building site with assurances that the open space value which they are attracted to will be protected.

Process

In considering options for residential development, thought should be given to issues which could impact the decision. Although the ranchers would typically not be the developers of residential areas, they need to consider these issues prior to making land available for someone else to develop and sell. These issues include possible conflicts between the residential area and ranchland. The alternatives discussed in this section anticipate that the ranches would maintain some interest in the future development, with either the ranches or the Diablo Trust being the recipient of annual assessments or fees for continued operation of the ranches and associated research.

Assessment of the land includes determining what area of the ranch is off-limits for residential development and what is available. There are two process examples used in other situations that describe approaches for assessing the developable areas of the ranchland.

The “sieve mapping” process is described in the book *Saving the Ranch: Conservation Easement Design in the American West*, by Anthony Anella and John B.

Wright. It is defined as being a qualitative analysis of the land to support long term protection of the land which is seen as a long-term monetary investment, versus the traditional quantitative analysis which focuses on short term monetary gain. The result of a qualitative process is a conservation subdivision. The process outlined by Anella and Wright in their book includes six steps. First is the identification of areas not to be developed, this includes conservation areas, natural features such as steep slopes, peaks, bodies of water, historic or archeologically sensitive sites, wildlife habitat, and areas that are integral to the ranching operation where direct interface with development would be unacceptable. The next step involves mapping the information developed in the first step. The suggestion is that each category would have its own overlay map so they can be compared and contrasted, which is step three, resulting in a composite map of the overlays. This is where the sieve mapping term is derived, as at this point the land that is not included in any of the overlays “falls through the sieve” and is what’s left for possible development.

The next step is identifying the housing sites based on the exclusion of lands identified in the first steps. The authors suggest walking the land with the maps and camera in hand to identify “optimum and appropriate” building sites. Consideration should be given to views, topography, visibility of other houses, desirable weather/seasonal orientation, etc. The result of this step is an analytical diagram to ensure that the proposed developable areas are meeting the intended desire. The next step is road layout which avoids crossing conservation areas, creates inconspicuous roadways using contours and avoiding standard grid, minimizing road length to minimize costs, and using existing roads where possible. The final step is drawing the lot lines based on all of the previous steps.

In his book *Conservation Design for Subdivisions: A Practical Guide to Creating Open Space Networks*, Randall Arendt describes a similar approach using a context map and detailed existing resources and site analysis map, including trees, wetlands, views, etc. He also recommends a site visit to walk the property with the owner, planning staff, commissioners, and neighbors. In the case of the ranch properties it could include natural resource specialists, members of the Diablo Trust, as well as the ranchers. A sketch plan, and design standards for quantity and quality of open space are integral parts of Arendt’s process.

Regardless which process, or combination of processes are pursued, there are essential questions that need to be addressed. A decision must be made about whether it is more desirable to have clustered lots or scattered home sites. This is based in large part on where the developable areas fall out of the sieve on the map. One step that is not included in either of the examples is provision of utilities. Early in the process a determination will need to be made as to what utilities will be required and how they will be provided. The expense of running utility lines will impact the developability and should be included in any sketch plan or sieve mapping process.

Other issues to be addressed when considering residential, or any development affect the restrictions on new residents, owners, or visitors. One of the primary questions is what area of the ranch should be off-limits for use of future residents? Not just where development is not acceptable, but where access is not acceptable. This should be included in the same map analysis process described above. A related question is whether residents/owners will be granted easement rights to use any part of the ranch. If so, how will that be described and what will their use allow or be



restricted to? Will lot owners pay monthly or annual fees that will go back to the ranch or to the Diablo Trust for operations/monitoring, etc? What restrictive covenants would be necessary and/or desirable to place on residential housing development (e.g. possible design criteria, fencing restrictions)? Trail access across the ranch to public lands, or accessible ranch lands should also be considered. Certainly, some of the benefits for purchasing a building site within a working ranch would be accessibility to desirable sites that are part of the undeveloped lands.

Possible Approaches

Open Space/Cluster Subdivisions concentrates development of residential lots in a cluster in less sensitive areas of a site without compromising the visual aesthetics of the open ranchland. The trade-off for approving smaller lots is the protection of the open ranchland through a conservation easement.

Scattered or limited development is desirable if only a few locations are deemed acceptable for single family development. If there is a desire to minimize impact or encroachment of residences on ranchland, only a few larger parcels are identified as developable. This would no doubt include some sort of monthly/annual contribution from the lot owner to maintenance of the ranchland, or Diablo Trust research.

The current zoning on the private property within the RPA is General, with a 10 acre minimum parcel size for residential development. Development under any of the scenarios would require some zoning changes, presumably to allow for smaller lot sizes as a trade off for preserving large expanses of open ranchland, or in the case of scattered large parcels it would be desirable to rezone to a larger minimum parcel size, also in conjunction with open space preservation.

Case Studies

Heritage Ranch has five different properties in New Mexico which are part of the “Protective Community” concept of development, one that creates home sites within ranches. The purchase of the home sites helps fund the Heritage Ranch Institute which manages the properties. The ranches remain working ranches operated by the Institute. The lot sizes range from six acres to 40 acres.

Montosa Ranch Project (New Mexico) is described in the book *Saving the Ranch: Conservation Easement Design in the American West*. Using the “sieve” method, the owners evaluated different options with a focus on limited, protected residential development. This case is similar to the Heritage Ranch concept but on a smaller scale.

Routt County, Colorado has adopted a minimum county zoning of 35 acres, consistent with the state subdivision law that allows the creation of 35-acre lots. Routt County has adopted an ordinance that allows the number of homes at 1

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Participating in the preparation of the RPA was a growing experience. I was forced to think about what I really wanted to see out here (and what I don't want to see) 20-50 years from now. And that was something that needed to be done.

Judy Prosser, Bar T Bar Ranch

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per 35 acres plus one bonus unit for each 100 acres set aside as open space. For example, a 280-acre ranch gets 8 lots plus two bonus lots for a total of 10 lots, average size 8 acres, with 200 acres set aside as open space. The purpose is to allow the ranchers to sell off a few parcels without breaking up the agricultural land. The smaller lots sell for more than the 35-acre parcels because of the protection of open space. Although Arizona has different subdivision laws and Coconino County different zoning, there is some transfer potential.

Regulatory Issues

Development of homesites will require some level of county approval, depending on what process is pursued. Improvement requirements for scattered homesites on large parcels will have a different level of service requirement than a cluster development with smaller lots clustered together.

All subdivisions would go through a formal review and approval process with the county and state. The purpose of identifying alternatives through the RPA process that in theory are acceptable to both the ranches and the County is to provide some level of assurance that if they decide to pursue residential development as an economic alternative in the future, it will be consistent with the County-approved plan.

Planning and Zoning Issues

In order to give greater guidance to the County in consideration of future development proposals, this plan identifies the rancher's preference if residential development were to be pursued—locations appropriate for smaller lot cluster developments and/or sites where larger, scattered parcels may be deemed appropriate. The *County Subdivision Ordinance* currently requires fencing where residential development is proposed adjacent to ranchland. This provision is counter to the concepts identified above, so a waiver would be necessary. However, in creating a development proposal, the interaction between grazing livestock and human residents would need to be addressed, including possible restrictions on private fences and pets, for example.

Next Steps

The ranchers have identified several private inholdings which they consider potential locations for future housing development consideration. Prior to making these lands available for development, or pursuing zoning and subdivision requests, it would be appropriate for the landowners to make the site assessments outlined in this section, to identify more specific issues for each potential site. Designation of building areas, provision of utilities, access, etc. would be identified through this process, as well as locations which would be restricted from future development. It will be important to involve the County in this process so questions of regulatory restrictions and development standards can be considered at the beginning stages, rather than later in the process.

Coordination with all regulatory agencies which would have some involvement in approving residential development should also be pursued early in the process to understand what level of improvements and what approvals will be necessary. These include but are not limited to ADEQ (Arizona Department of Environmental Quality), ADWR (Arizona Department of Water Resources), Coconino National Forest, and Blue Ridge or Mormon Lake Fire District.

HOUSING

GOAL

Consider limited housing development which is sensitive to and compatible with the historic ranching use of the land and preserving the unfragmented open space, landscapes, wildlife habitat, and natural areas.

POLICIES

The County supports alternatives to the conventional pattern of 40-acre lot development, for example by allowing the same number of units as allowed by current zoning, but clustered on a portion of the property, in order to retain ranching on the majority of the land.

The County will assist the property owners in determining the most viable and desirable location for housing development from a planning perspective.

Adequate facilities and infrastructure shall be part of any residential development. The determination of "adequacy" will not be based on subdivision requirements alone, but on the type of housing (clustered vs. dispersed) and the ability to provide services. Waivers from typical requirements, such as paved access, will be considered in order to meet the goals of the RPA and achieve ranch-appropriate design.

Housing and other improvements associated with residential-related development should incorporate appropriate rustic design features that reflect the cultural context and heritage of the ranches.

OTHER IDEAS TO CONSIDER

A number of economic development options are described in detail within this plan. These options represent real opportunities for the ranchers to expand their existing use of the land while maintaining the guiding principles of preserving the ranching heritage. The options described in significant detail were those noted by the planning committee as being some of the most interesting and those with the most potential. However, a number of other potential ideas were initially discussed and deserve some consideration within this plan. Some uses have the potential to generate a much greater source of income for the ranchers while others may not generate significant amounts but may be additional sources of revenue with limited input from the ranchers. Many of the uses listed within this plan have the potential to be combined together. The following is a brief review of five other options including native seed production, heritage and specialty crops, raising sheep and goats, mining, and filming. Contact and resource information for each of these topics can be found in the appendix.



Indian ricegrass, a native of the region, is highly palatable for wildlife and livestock, and was used as a traditional food source by indigenous people.

Native Seed Production

The idea for native seed production was generated from the significant need for seed after the recent large forest fires in northern Arizona. The native seed helps to stabilize soils after fire and prevent erosion. The production of seed however is not an easy feat. The seeds are essentially produced as a crop, requiring weeding and irrigation. A significant amount of equipment may be needed in order to maintain and harvest an adequate seed crop. It is quite possible that a substantial capital investment would be required depending on the size of the crop. There is also a significant amount of hand labor required from tending the crop to cleaning the seed. Weed seed in seed crops is not acceptable in anything but trace amounts so equipment has to be cleaned regularly to prevent weed infestation. The harvested seed is also cleaned prior to sale. It is possible to establish clients that will purchase the seed on a large scale such as Arizona Game and Fish, Forest Service, and State Land Department, but this is not always easy to set up. Profits are highly dependent on other market forces. For the past five years seed prices have steadily gone down and are currently about half of what they used to be due to increasing suppliers entering the market. The market may not be as difficult within northern Arizona as there are no large scale native seed producers nearby. As this use falls under the agricultural exemption there would be no planning and zoning review for a project on ranch lands. Native seed may not be a project that the ranchers would undertake themselves, but the ranches may provide the land resource to another interested party.

Heritage & Specialty Crops

The production of “heritage crops” centers on traditional American foods that have not become commodity products and are at risk of extinction. Heritage crops include a wide variety of edible plants including the Marshal Strawberry which survives only in the form of a single clone at a USDA laboratory. Preservation efforts have been undertaken by a number of groups to grow and utilize such heritage products. Heritage crops are not limited to plant products but include livestock and poultry. Traditional crops work in conjunction with their ecological

surroundings. A coalition has been developed to promote the preservation and use of these heritage crops—RAFT (Renewing America's Food Traditions). This coalition includes the Center for Sustainable Environments at NAU which is a strong local resource for the ranchers if they were to pursue this idea. Specialty crops include more rare items that are not readily available as a commodity item or fall within the more expensive commodity products. These products could be used traditionally by different ethnic groups that can be sold and distributed on a local level. See the direct-marketing section of this plan for more detailed information on resource distribution. Ranchers could take on the production of heritage or specialty crops on their own or in conjunction with a partner or simply lease land for a local producer. The profit margin adjusts with each option. This use also qualifies as agricultural in nature and would be exempt from planning and zoning review. One exception would be if the ranchers were to pursue on-site sales which could require a conditional use permit for more temporary sales and possibly a rezoning for more permanent installations.

Sheep & Goats

It is possible to include other animals in the existing ranching activities already occurring within the project area. Other animals that were mentioned included buffalo, elk, sheep and goats. Buffalo and elk have unique challenges and do not appear to be an exciting option for the ranchers. However, sheep and goat production was discussed as a potential use for the ranchers. Sheep and goats have a multitude of uses; they can be raised for meat, for wool, for dairy purposes, and for land clearing projects. A dairy operation would require goats to be kept in close quarters and under special diets in order to provide a consistent milk product. Dairy operation can also require a lot of manual labor on the smaller scale which includes milking the goats up to twice a day. If a rancher were to have an interest in pursuing a goat dairy operation, then products could also be direct-marketed locally. A dairy operation would require a conditional use permit to operate, because this use is very similar to a concentrated feeding operation.

If ranchers were to introduce sheep and goats into their livestock portfolio they would most likely be raised for meat and wool. This use would not require any review from planning and zoning as it falls under the current agricultural exemption. The use of these animals for meat production could remain similar to the current cattle operation or could be used in a direct-marketing project. For example, the Navajo Churro sheep are a heritage animal that could be marketed specifically based on the breed. The existing processing plant in Chino Valley will process sheep and goats in addition to cattle and could be marketed similar to beef. Meat goats can also be used in land clearing projects. Meat goats are used in Hawaii to clear abandoned sugar cane plantations, and in California they are used to clear land for fire breaks, as well as for fuel load reduction and the rejuvenation of lands. In order to use goats in this manner, they have to be controlled which can be done with portable polywire electric fence which can be used in creative ways to maintain goats. Also, many goat farmers use the Great Pyrenean Mountain guardian dogs to watch over the animals. The meat goats have a greater potential to fit within the existing ranch environment and could be incorporated into the land management principles used by the ranchers.



Hopi corn is a classic example of a traditional heritage crop.



Moqui (above) and other ranch properties could provide scenic locations for film productions or commercial advertising photo-shoots.

Mining

An idea presented to the ranchers early on in the RPA process was the potential for mining materials primarily used in road construction. The most desired material is basalt, but some forms of chert and limestone are also acceptable. The Babbitt Ranch currently has a similar mining operation occurring near Grey Mountain. This lease brings in a substantial income for the Babbitt Ranch with little capital outlay. This idea appears to be a reasonable option if the required material is available on ranch lands and is accessible via existing roads. A resource inventory would need to be conducted to determine if the right materials are present. The most significant cost involved with mining would not necessarily be economic, but environmental, as the mining of material will permanently scar the landscape. Mining is also exempt from planning and zoning review.

Mining on private lands is most often set up through a contractual arrangement between the landowner and the potential mine operator. Contracts can vary widely in levels of sophistication and detail. The most significant aspect of a contract to mine would be the price or royalty paid to the property owner. For sand and gravel type operations, this price is usually expressed as an amount per ton or cubic yard. Prior to mining, on-site exploration activities will have to be conducted to ensure that there is an adequate supply of the desired material. These arrangements also

vary widely from informal agreements to formal contracts specifying any number of details and provisions. Mining can also be pursued on state and federal lands. The state land process requires a hardrock exploration permit prior to issuance of a lease. The state land process may be easier than trying to develop mining rights on federal land. More information on both processes can be found in a document entitled *Laws and Regulation Governing Mineral Rights in Arizona*. Further information can be obtained from the Arizona Department of Mines & Mineral Resources. This department does not issue permits, and is not a regulatory agency. Their principal function is to promote mineral resource development in Arizona as well as maintain a library of information.

Filming

There is the potential for ranchers to market their property as filming locations. Arizona has provided an imaginative background for many a film, television show, and commercial. With such a close proximity to the center of the industry in southern California, a pristine northern Arizona ranch could be the perfect setting for the film/television industry. There are a number of ways that this marketing can be accomplished. There are on-line services that will list the property information for a fee, which is then provided to individuals within the film industry. There are several other local contacts, including both public and private, that can be made to encourage use of the ranches for film locations. The ranchers would need to decide what areas of the ranches would be appropriate for this type of use, what type of rent would need to be charged, and develop a contract which would require the film crew to insure themselves and any damage that might occur to the ranch. There is a ranch in southern Arizona with its own web page that advertises their services to the filming industry.

Next Steps

Depending upon the options selected above, the follow-up steps to commence a project on either ranch is to determine what agency, department, or association would be the most beneficial to work with. For example, there are a multitude of products that the ranches could produce that could be taken through the direct-marketing process. For more information on direct-marketing, see the value-added beef portion of this document. The above listed suggestions of native seed, heritage crops, goats and sheep could easily be expanded into poultry products or pork. Obviously, it would need to be something that the rancher would feel comfortable adding to their portfolio of existing uses. There is definitely a market for locally produced goods in this area.

The other options presented here would require obtaining different types of information and contacts. Information on these potential contacts is located in the appendix. Mining has a potential to produce a substantial amount of income depending upon the availability of materials and ease of access. An exploration project would be the first step in assessing this potential. The option to open up the ranches to groups looking for filming locations would need to be evaluated in terms of the costs to the ranches as opposed to the benefits. The type of operation that is involved could greatly impact the effects that the ranchers would face in sharing their lands for a temporary period of time. It would seem fitting at least to try out the potential of this use to see how it fits within existing ranching operations.

OTHER IDEAS

GOAL

Supplement ranching operations with other economic development options to expand the existing use of the land while maintaining the guiding principles of preserving the ranching heritage.

POLICIES

The County shall work with the property owners in the pursuit of other economic development options.

Such land uses shall seek to minimize impacts on nearby residential areas, primitive roads, and physical alterations to the landscape.





Bar T Bar winter range.

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The challenge in maintaining open space is to pay for it by finding viable options that ensure long-term economic viability. The Diablo Trust and Bar T Bar's win/win proposal before the City of Flagstaff is a unique opportunity to do just that. It proposes selling water rights on 5,500 acres to the City. This land and an additional 45,000 acres donated by Bar T Bar would be held under a conservation easement. Income from an approved wind farm would go to the City. We really are trying to think outside the box.

Bob Prosser, Bar T Bar Ranch

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LAND PROTECTION OPTIONS

Most ranchers in Coconino County, including those in the Diablo Canyon RPA, have a desire to keep their ranches intact and retain the traditional grazing use of the property. However, because the value of the family estate is usually tied up in the value of the property, because grazing may not generate sufficient revenue to sustain the families adequately, because there may be issues with aging families with children who are not interested in pursuing an agricultural career, and because estates may not be set up in a manner that offers children options, there is often a desire to draw cash from the property through sale. Other than outright sale and the economic possibilities discussed in this plan, there are possible approaches to "cash out" and protect the land. These include the sale of conservation easements or development rights, the transfer of development rights, and grass banking.

Conservation Easements

A conservation easement is a legal document that limits development of property. The development rights are donated or sold to a nonprofit conservation organization, a land trust, governmental entity or other organization legally entitled to hold easements. Easements are generally permanent, usually prohibit all development except that needed for grazing uses, and have a value of about 55% of the total development value of the property. If donated, there are federal income and estate tax benefits, and if sold there are cash benefits and potential property tax savings. Easements can be temporary, although this would eliminate tax benefits, and temporary easements could be used to slow development and to protect the land for a set period of time in order for the family to assess options.

The rancher continues to own and use the land within the bounds of the easement language. Some of the rights associated with the land are given up, for example the right to subdivide and build additional buildings, but the right to operate a ranch is retained. Conservation easements are typically pursued because of the property owners' love of the land and their desire to protect the land from inappropriate development while retaining ownership.

Easements are very specific in terms of what can and cannot be done on the land, and there is a considerable range in the way they can be written—from allowing no development or improvements of any kind, to allowing limited development. To enjoy the tax benefits, an easement would likely have to eliminate virtually all revenue-producing activity other than the traditional uses. At a minimum, the establishment of an easement requires legal advice, an appraiser familiar with easements, and an organization willing to accept the easement. There are resources potentially available at both the state (Arizona Open Space program) and federal (farmland protection program) as well as private sources such as the Nature Conservancy to purchase easements.

Conservation easements are often not granted for entire ranches, but for a majority of the ranch that contains the highest environmental and wildlife habitat values. Ranch headquarters and other areas of the ranch that are more suitable for development are not included in conservation easements.

Purchase of Development Rights

PDRs are generally used interchangeably with conservation easements, but there could be a scenario where the purchase of development rights would be preferable because of a lack of interest in meeting generally included conservation values and monitoring that are included in easements. PDRs involve assigning value to permitted development and sale of development rights at that value.

Transfer of Development Rights

A TDR program involves the sale of development rights in one area, generally identified as the “sending area,” and purchase of those development rights for use in another area, the “receiving area.” This is a market approach with willing property owners at both ends. In approximately 160 jurisdictions across the country, none in Arizona, TDR programs have been implemented, and lands have been identified where development is not desirable, usually either to protect environmentally sensitive lands or to protect farmland or ranchland, and other areas have been identified where growth is appropriate. Property owners in the growth-appropriate areas could increase the allowed density of development, for example from an allowed 50 units to a desired 75 units, by buying 25 units of development from a property owner in an area where land protection is desired. Once the development rights are purchased in the sending area, the land is permanently protected as open space or for agricultural uses. In Arizona, municipalities have had the legal authority to adopt TDR programs for many years, though none has. Counties were given the legal authority in the 2005 legislative session with the addition of Arizona Revised Statutes Section 11-821.03. Several counties are in the process of developing ordinances in order to implement TDR programs.

Grass Banking

The following section is from the Sonoran Institute web site. Permission has been granted to reproduce the information here.

Grassbanks: The purpose of a Grassbank is to make possible the ecological restoration and productivity of grazing lands. By improving the condition of the land, a Grassbank can strengthen the foundation of a region or area's ranching heritage. It can also help reduce conflicts between grazing and other land uses.



Grama grass.



LAND PROTECTION

GOAL

Preserve working ranches, unfragmented landscapes, and the natural character of the Diablo Canyon ranches.

POLICIES

The County shall work with the property owners to explore all options pertaining to conservation easements, including the dedication of temporary easements.

The County shall adopt a transfer of development rights ordinance and work with property owners to identify sending and receiving areas.

The County shall encourage the clustering of development on certain portions of the property in order to conserve most of the private lands as working ranches.

Conservation easements and other protection mechanisms will be focused on areas of the ranches that have the highest value for habitat and open space protection.

Grassbanks require collaboration among ranchers and, generally, public land managers, so that the grazing lands involved are of sufficient size to allow restoration of land and the rotation of cattle to actively grazed areas. The rested portion of the land may then be allowed to grow a crop of grass that may then be burned in a controlled fire. Such a fire can check and even reverse the encroachment of trees and shrubs into grasslands. Alternatively, other treatments could be considered, such as small-diameter timber removal or brush control and reseeded. Continued rest for one or more grazing seasons will allow desired new vegetation to grow prior to returning livestock to the area.

If ranchers are able to move their cattle to other grazing lands while restoring all or part of their lands, there would be no need to reduce or suspend normal ranching operations. A Grassbank thereby makes it possible for a rancher to maintain the economic viability of his or her operation and removes a significant disincentive for enhanced range management.

In addition to the Malpai Borderlands Group, the Conservation Fund is involved in a Grassbank initiative in northern New Mexico, involving the U.S. Forest Service and the Northern New Mexico Stockman's Association. The Conservation Fund has bought a property qualifying it to become a permittee of a substantial grazing allotment within the Santa Fe National Forest. The Fund will allow other national forest permittees from northern New Mexico to graze on their allotment while the Forest Service and the permittees restore other grazing allotments.

Planning and Zoning Issues

Conservation easements are done outside the planning and zoning process. However, they can be inextricably linked. In certain situations, in order to justify recommending approval of a rezoning to allow higher density in a rural area, there might be an expectation that a conservation easement would be created on all or a portion of the remainder of the land. Open space zoning can also be used to create an additional layer of protection, although a conservation easement if given in perpetuity provides much more permanent protection than zoning.

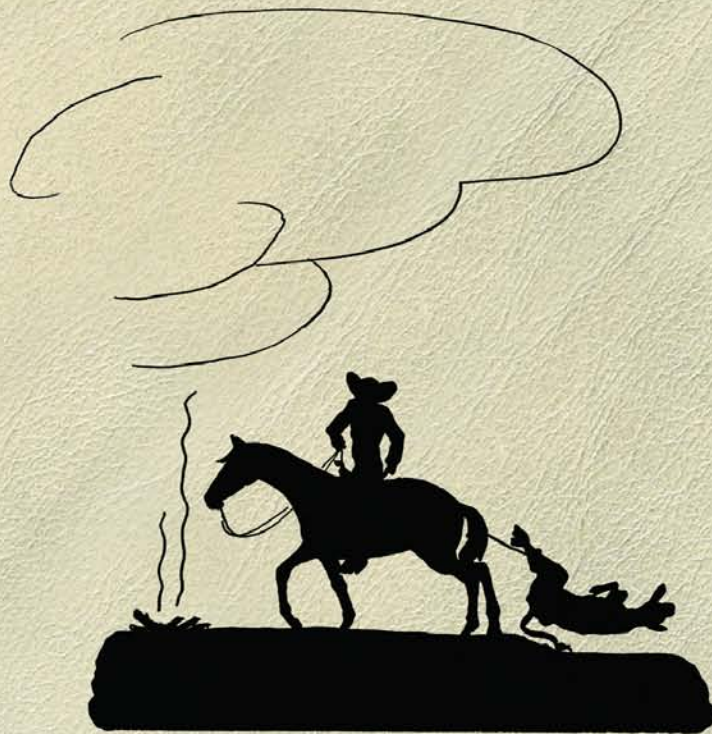
A TDR program could and most likely would involve the County as intermediary, though it could be set up as a program between willing and interested property owners.

Next Steps

As stated above, the Arizona State Legislature authorized counties to adopt transfer of development rights programs. A model ordinance is being developed that should be completed in early 2006. Once completed, Coconino County will proceed with the adoption of a county TDR ordinance, and then working with large property owners and developers pursue how best to implement an effective TDR program.

In terms of conservation easements, the identification of lands that the ranches may consider for a variety of economic uses such as housing, tourism, and energy development was the first step in also identifying lands that should be considered for conservation. The ranch families should pursue all options related to conservation easements including temporary easements, as well as available funding sources to purchase easements.





EVOLVING TRADITIONS

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The intent of the RPA is to enable the ranchers to keep the ranches intact, to preserve the traditional uses, and to create a situation where long term stewardship and land improvement is at the forefront. The County will continue to work with the Diablo Trust and the property owners to help achieve the goals of the RPA and to further the collaborative effort.

*Bill Towler, Coconino County
Community Development Director*

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FUTURE OF THE RPA

The Diablo Canyon Rural Planning Area was established by the Board of Supervisors as a permanent “entity” that does not go away once this plan is adopted. The RPA provides a framework to continue to provide organized comments to the County Planning and Zoning Commission and Board of Supervisors, as well as to other agencies, about activities occurring or proposed within the RPA area. According to the state statute authorizing RPAs, the recommendations of the RPA “shall emphasize voluntary, nonregulatory, incentives for compliance and accommodation of continuing traditional rural and agricultural enterprises.” There is no reason that this goal of the RPA of making recommendations to the Board of Supervisors should not be ongoing. The property owners within the RPA can do this individually or through the Diablo Trust, or County staff can assist the property owners along with the Diablo Trust. A cooperative approach is the preferred way of achieving the overall goals of maintaining the integrity of the ranches.

GENERAL GOALS AND POLICIES

Goal

Assist the property owners with the approval process for economic alternatives discussed in the RPA plan.

Policies

- The County will give favorable consideration to any zone changes that meet the intent of this plan and that do not detract from the integrity of the ranches.
- Favorable consideration shall be given to any waivers that would be necessary or would facilitate the uses contemplated in this plan, such as paving and landscaping waivers.
- Development of revenue generating activities shall further the goals and the operation of the Diablo Trust.
- The Department of Community Development shall facilitate the process of obtaining other county department and other agency approvals in order to implement the economic alternatives in this plan.

ACTION PLAN

Value Added Beef

- Develop a business and marketing plan that would outline details of pursuing a direct marketing project.
- Create standards for how products will be developed such as grass fed or feed lot operation.
- Pursue assistance from local sources supporting direct-marketing projects such as the Center for Sustainable Environments at NAU and the Canyon Country Fresh label.
- Look into other cooperative production efforts, potential for combining efforts with existing direct-market brands.
- Consider partnering with Native American tribes.
- Hold meetings with the Hopi Tribe, Babbitt Ranches, and other ranchers to explore all direct-market options for the region.

Tourism, Recreation & Education

- Investigate tourism development assistance programs available through the Arizona Office of Tourism, the Arizona Council for Enhancing Recreation and Tourism, the Arizona Hospitality Research and Resource Center (NAU), and the Institute for EcoTourism.
- Initiate discussions with a tourism development consultant such as Fermata, Inc. or Ranches of the West.
- Conduct inventory of resources to identify special natural and/or cultural attributes.
- Initiate strategic planning process including impact assessments, economic feasibility studies, and marketing plans.
- Develop complete business plan.
- Identify sources of capital and partnership opportunities.

Wood Products

- Research and pursue grant opportunities. Contract with or hire a grant writer to obtain start-up funding for wood products manufacturing (e.g. manufactured fireplace logs).
- Inventory piñon/juniper encroachment areas and issue contracts for fuel wood cutting.
- Participate with local and regional forest partnership organizations to promote the development of a wood products industry in northern Arizona (i.e. Greater Flagstaff Forests Partnership, Southwest Sustainable Forests Partnership).
- Initiate discussions with a private consulting firm specializing in business development of forest products-based enterprises (i.e. Four Corners Consulting Group, LLC).
- Investigate niche market opportunities for the manufacturing of custom furniture, signs, and architectural components (e.g. custom beams and *vigas*).
- Promote the development of a biomass electrical generating station in the vicinity.

Energy

- Continue to support the construction of wind test towers, for example at the south end of the ranches, collect data for up to two years, and have the data independently reviewed.
- Continue to explore upgrades to transmission lines in order to facilitate more projects, for example upgrading the capacity of the existing transmission line between Winslow and Flagstaff and constructing the proposed new line between Winslow and Payson.
- Adopt a wind project ordinance that provides clear guidelines for future projects.
- Require a public participation process that includes property owners at a considerable distance from the project in order to mitigate concerns prior to public hearings.
- Help identify locations for future wind projects that minimize visual impacts.
- Work with APS and others to encourage the location of a biomass plant on or near the ranches in order to provide a market and a use for wood products that are removed to meet landscape description goals.



(top) Scenic area near Meteor Crater.
(middle) Bob Prosser, Bar T Bar.
(above) Diablo Trust "Day on the Land" field trip.

- Continue to monitor and support efforts to change the environmental portfolio standards to require that a higher percentage of the state's electricity needs are met from alternative energy sources.

Housing

- Conduct site assessments of the lands identified for possible future residential development utilizing the “sieve mapping” process discussed in the Housing section.
- Identify areas not to be developed, such as natural features, archeological sites, wildlife habitat, and areas integral to the ranching operations.
- Assess building areas, availability of utilities, and adequacy of access in light of the *County Subdivision Ordinance* requirements in addition to the overall goals and policies of this plan.
- Consider possible waivers the County could support to facilitate development, e.g. unpaved access roads, utilities, etc. Waivers would be based on ensuring public health, safety, and welfare issues are considered while preserving the open space, ranching, and other qualities identified in this plan.
- Include ADEQ, ADWR, the appropriate Fire District, and other pertinent agencies in the process early on to ensure all requirements are addressed.
- Define desirable design criteria to apply to future residential development. Such criteria should include standards that work to limit the physical and visual impact of the residential development on the landscape.
- Determine appropriate access limitations by future non-ranch residents to be included in CC&Rs.
- Develop land ethic and stewardship standards to be included in CC&Rs.
- Consider alternative development/management options including the following:
 1. A non-profit management system such as Heritage Ranch where buyers contribute assessments to support the ranches.
 2. Long term lease of land for cabins.
 3. Property owner as developer.
 4. The possibility of a time-share concept.

While the Diablo Canyon Rural Planning Area plan is not a panacea for all economic ills, it does provide the framework for increased opportunities to retain this critical watershed as largely uninterrupted open space.

Mandy Metzger, Director,
Diablo Trust

Other Ideas to Consider

- Determine the best agency, department, or association most beneficial to work with depending on use.
- Look into the potential of cooperating with the USFS in establishing plots (e.g. in partnership with the Arboretum, Flagstaff Native Plant & Seed, or others).
- Explore areas on the ranches with the potential for mining resources.





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Resources, Contacts, and Publications

HISTORY OF THE PLAN AREA

Neff, Don J. Notes on the Land Use History of Anderson Mesa and the Canyon Diablo Plains in the Forest Service Era, 1906 to 1940. Flagstaff, AZ: Arizona Game and Fish Department, unpublished manuscript, 1984.

Smith, Dean. A Tale of Two Families: The Tremaines and the Chilsons. Flagstaff, AZ: Bar T Bar Ranch Company Limited Partnership, 1994.

VALUE ADDED BEEF

Arizona Department of Agriculture, meat and poultry inspections, www.agriculture.state.az.us

Flagstaff Community Farmers Market, www.environment.nau.edu/farmersmarket

Flagstaff Community Supported Agriculture Project, Hydee Tubbs, (928) 773-1757, www.localharvest.org

Ervin's Natural Beef, Will and Jan Holder, www.ervins.com

NAU Center for Sustainable Environments, Canyon Country Fresh label, Dr. Gary Nabhan, www.environment.nau.edu

Oregon Country Beef, Doc and Connie Hatfield, www.countrynaturalbeef.com

Perkinsville Meat Processing, Chino Valley, AZ, specializing in domestic and wild game, Mark and Cyndy Ducote, (928) 636-6679

University of Arizona Meat Lab, innovative meat products, www.ag.arizona.edu

TOURISM, RECREATION, EDUCATION

Anderson Ranch, Canadian, TX, birding tours, value-added beef, Jim Bill Anderson, (806) 323-5632, www.andersonranchbeef.com

Arizona Office of Tourism (AOT), Tourism Development Division, Mike Leyva, Director, (602) 364-3723, mleyva@azot.com www.azot.com

Arizona Rooms With A View, cabin rentals on Coconino, Coronado, Kaibab, and Prescott National Forests, Coconino N. F. (928) 527-3600, Coronado N. F. (520) 670-4552, Kaibab N. F. (928) 635-8200, Prescott N. F. (928) 443-8000, www.fed.us/r3/recreation/

DudeRanches.com, resource listing of dude and guest ranches across North America, www.duderanches.com

Elkhorn Ranch, Tucson, AZ, dude ranch, winter vacation destination, Mary Miller, (520) 822-1040, www.guest ranches.com/elkhorn

Equitours, Dubois, WY, horseback riding vacation tours, (800) 545-0019, www.ridingtours.com

Fermata Inc., Ted Lee Eubanks, owner/manager, (512) 472-0052, info@fermatainc.com www.fermatainc.com

Grand Canyon West Ranch, Hualapai Indian Reservation, AZ, Grand Canyon tours, horse-drawn wagon rides, Western-style BBQ, (800) 255-7101, <http://firststraveltours.com>

Institute of Ecotourism, Jonathan Duncan, Director, (928) 282-2720, jonathan@ioet.org www.ioet.org

King Ranch, Kingsville, TX, guided nature tours, King Ranch Visitor Center, (361) 592-8055, www.king-ranch.com

La Garita Creek Ranch, Colorado dude ranch, special themes, hot air ballooning, www.lagarita.com

Ranches of the West, Consultants to and for Recreation and Agricultural Enterprises, Reid Rosenthal, President, (406) 842-7101, info@ranchesofthewest.com www.ranchesofthewest.com

Rock Art Ranch, Winslow, AZ, petroglyphs and steaks, (928) 288-3260

WOOD PRODUCTS

Greater Flagstaff Forests Partnership, broad-based community partnership devoted to forest restoration and stewardship, Steve Gatewood, Program Director, (928) 226-0644, www.gffp.org

Mater Engineering, Ltd., small-diameter timber utilization studies, Catherine M. Mater, (541) 753-7335, www.mater.com

Southwest Sustainable Forests Partnership, collaborative partnership of communities, government agencies, forest products industries promoting forest-products business development, technical assistance, grants, Herb Hopper, Little Colorado RC&D Arizona Coordinator, (928) 524-6063, hhopper@littlecolorado.org www.littlecolorado.org

The Arboretum at Flagstaff, native plants of the Colorado Plateau, research, biomass utilization, (928) 774-1442, www.thearb.org

USDA Forest Products Laboratory, Madison, WI, grants for woody biomass utilization, (608) 231-9518, www.fpl.fs.fed.us/tmu

ENERGY DEVELOPMENT

American Wind Energy Association, wind energy basics, listing of projects in each state, new developments, photographs of wind projects, www.awea.org

National Renewable Energy Laboratory, National Wind Technology Center, Boulder, CO, research and development of wind energy technology, www.nrel.gov/wind

U. S. Department of Energy, Energy Efficiency and Renewable Energy, history of wind energy, wind energy basics, advantages and disadvantages, conditions for location, wind energy development process, www.eere.energy.gov

The Windustry, wind projects listed by state, wind basics, wind energy economics, business structure options, resource library, information clearinghouse, www.windustry.com

Utility Wind Interest Group, forum for analysis of wind technology, needs and requirements of electrical utilities, technical information on transmission, other aspects of wind energy, www.uwig.org

HOUSING

Anella, Anthony, and John B. Wright. Saving the Ranch: Conservation Easement Design in the American West. Washington, DC: Island Press, 2004.

Arendt, Randall. Conservation Design for Subdivisions: A Practical Guide to Creating Open Space Networks. Washington, DC: Island Press, 1996.

NATIVE SEED PRODUCTION

The Arboretum at Flagstaff, www.thearb.org

HERITAGE & SPECIALTY CROPS

NAU Center for Sustainable Environments, www.environment.nau.edu

SHEEP & GOATS

[See value-added beef resources]

MINING

Arizona Dept. of Mines and Mineral Resources, (800) 446-4259

FILMING

Arizona Department of Commerce, Online Film Directory, www.az.commerce.com

Flagstaff Convention and Visitor Bureau, Film Commissioner, (928) 779-7611.

PJ Connolly, location scout/film producer, (928) 779-6073 or (928) 779-2836.

LAND PROTECTION OPTIONS

Bill Cordasco, Babbitt Ranches, 34,480-acre conservation easement donation to the Nature Conservancy and 6,400-acre conservation easement to Coconino County, (928) 774-6199.

Land Trust Alliance, advocate and resource for land trusts across the U.S., conservation easements, publication: The Standards and Practices Guidebook: An Operating Manual for Land Trusts (detailed information about conservation easements, preparation of documents, legal and technical issues, tax benefits, stewardship, sample forms) <http://landtrustalliance.org>

Sonoran Institute, community collaborative facilitators, Western Landscapes Program to improve the integrity and health of ranch and farmlands in the West, research and publications, www.sonoran.org

The Nature Conservancy, conservation easements, <http://nature.org>

Anella, Anthony, and John B. Wright. Saving the Ranch: Conservation Easement Design in the American West. Washington, DC: Island Press, 2004.

Rosan, Liz, ed. Preserving Working Ranches in the West. Tucson, AZ: Sonoran Institute, 1997.

Vint, Mary, et al. Conservation Options for Landowners: A Guide to the Tools and Benefits of Protecting Natural Areas on Private Land. Tucson, AZ: Rincon Institute, 1998.

CONSERVATION, COLLABORATION, AND SUSTAINABILITY

Dagget, Dan. Beyond the Rangeland Conflict: Toward a West That Works. Flagstaff, AZ: Good Stewards Project, 1998.

Dagget, Dan. Gardeners of Eden: Rediscovering Our Importance to Nature. Santa Barbara, CA: Thatcher Charitable Trust, 2005.

Friederici, Peter, and Rose Houk, eds. A New Plateau: Sustaining the Lands and Peoples of Canyon Country. Minneapolis, MN: Renewing the Countryside, 2004.

Meine, Curt, and Richard L. Knight, eds. The Essential Aldo Leopold: Quotations and Commentaries. Madison, WI: University of Wisconsin Press, 1999.

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Arizona Game and Fish Department: page 14

Joan Carstensen: page 38

Diablo Trust archives: inside front cover, pages iv, vi, 7, 9, 11, 14,

22(top), 23(bottom), 26(top), 27(top), 44, 56, inside back cover

Norm Lowe: pages 32, 42

Mandy Metzger: page 56

Trent Mesa Wind Project: page 37



